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SENATE FACT FINDING COMMITTEE ON EDUCATION SUBCOMMITTEE ON INSTRUCTIONAL TELEVISION

PROCEEDINGS OF HEARING [of the]

Members of the Committee:

Senator Fred S. Farr, Subcommittee Chairman
Albert S. Rodda
Paul L. Byrne

Executive Secretary: Alvar Yelvington

June 7-8, 1962
Los Angeles State College
Los Angeles, ~~California~~

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FACT FINDING COMMITTEE ON EDUCATION
SUBCOMMITTEE ON INSTRUCTIONAL TELEVISION

MEMBERS PRESENT AT THE JUNE 7 - JUNE 8, 1962 HEARING

Senator Fred S. Farr, Chairman
Senator Walter W. Stiern

FRED S. FARR, SUBCOMMITTEE CHAIRMAN

This is the Committee on Education, Sub-Committee on Instructional Television. Some of our members have not arrived as yet, but on my right is Senator Walter Stiern from Bakersfield. Inasmuch as our Executive Secretary must have gotten caught in the throughway snarl or something and is not here as yet, we do not have the agenda here before us. We'd appreciate it very much if we might have a slip passed around for people who have speeches who want to make them. I think there are two or three who indicated that they wanted to get away at the earliest possible time and we'd like to put them on first. If you could pass this around I'd appreciate it. I believe that Dr. Chaffee indicated that he has another appointment to meet, and I wonder if he would come forward. I don't believe I introduced myself. I am Fred Farr and I am Chairman of the Subcommittee, and I think we have introduced Senator Stiern. Will each of the persons who have a statement to make identify themselves for the record, please.

EVERETT CHAFFEE, ASSOCIATE SUPERINTENDENT OF THE DIVISION OF INSTRUCTIONAL SERVICES OF THE LOS ANGELES CITY SCHOOLS

Mr. Chairman and members of the Subcommittee, I am Everett Chaffee, Associate Superintendent of the Division of Instructional Services of the Los Angeles City Schools. The Division which I had in the Los Angeles City Schools has charge of Radio and Televisions Programs, one of the responsibilities which is directly under my supervision.

Mr. Chairman and members of the Subcommittee on Instructional Television of the Senate Fact Finding Committee on Education:

It is my pleasure to report to you the television activities of the Los Angeles City Schools.

This week marks the close of the fifth year that our school system has presented programs for in-school or classroom viewing. We do not use television lessons as substitutes for teachers and it is not our desire in the present television planning and teaching to have television lessons take the place of teachers. The general philosophy of the Los Angeles City Schools is as follows: "Programs will bring instructional materials to the classroom which cannot be provided as well by the classroom teacher."

With this philosophy in mind personalities and materials have been presented by television that would be impossible or impractical for classroom teachers to obtain as individuals. Our Radio-Television Office has had wholehearted cooperation and help from such agencies as the Los Angeles

County Museum; local, state, and federal governments; and many business organizations. Individuals who are highly specialized in a particular field and school personnel have likewise cooperated fully. I might also state that we have had the fullest cooperation from our local universities with some of our outstanding authorities in various fields appearing in our programs.

There is and has been close cooperation between the Los Angeles City Schools and the Office of the Los Angeles County Superintendent of Schools in the planning and presentation of television lessons designed for in-school viewing. Our Supervisor of Radio and Television Education has served as a member of the Regional Television Committee. By his membership on this committee, it has been possible to know in advance the television plans of the Regional Committee and to exchange program materials and study guides with them. This reciprocal arrangement has eliminated the possibility of duplication or overlapping of program content. In the Los Angeles City Schools we use the County Programs and the County Schools use ours, and the two are coordinated.

During the current school year our programs have been telecast on station KCOP (Channel 13) from 9:15 a.m. to 10:15 a.m., Monday through Friday. Our elementary programs are seen from 9:15 to 9:45 and the secondary from 9:45 to 10:15 a.m. When our current series is concluded tomorrow morning, we will have completed for this year 320 half-hour television programs for classroom viewing; that means 320 television lessons during the past current year in the Los Angeles City Schools.

Permit me to outline for you the program schedule presently being used by our schools. At the elementary level we have the following:

Monday - Guidepost to Art - Grades 5 and 6. (an art program. We find that this is a field where many teachers feel that they need outside help and we've been able to do a lot for this program.)

Tuesday - Los Angeles, Our City - A3 Social Studies

Wednesday - Guidepost to Science - Grades 3 and 4

Thursday - Modern California - A4 Social Studies

Friday - Guidepost to Science - Grades 5 and 6

Friday - Storybook Time - Kindergarten through Grade 3

At the secondary level the following programs are provided:

Monday - Guidepost to Science - A8

Tuesday - The Local Scene - B8 Social Studies

Wednesday - Guidepost to Science - B9

Thursday - Guidepost to Literature - B9 English

Many of our students are participating in the Conversational Spanish lessons that are made available by the Pasadena City Schools through the Regional Television Committee, and you will undoubtedly hear more about that program from the County.

In addition to our in-school programs we have also presented institutes and an in-service training project on television this year. During the fall semester we had four basic institutes in science for elementary teachers. The programs were telecast from 3:30 to 4:00 p.m. on school days so that it was possible for teachers to see them in their schools in faculty groups. I might say that this was an outstanding program; we brought four outstanding scientists to our elementary teachers who related the technical aspects of science to the elementary program. The in-service training project was also in science, and this was for both secondary and elementary teachers. It was made available to all teachers and was seen for 16 weeks on Saturday mornings from 8:00 to 8:30 a.m. The program entitled "Science Crossroads" was made possible by funds appropriated under Title III-B of the National Defense Education Act.

Our publication, "RADIO-TELEVISION Ways to Learning", and in your pack you have a copy of this publication, is printed and distributed 8 times during the school year. It gives an outline of the programs and it gives a study outline for each program so teachers are informed in advance as to just what is coming and can do the necessary preparations for the television program and the necessary follow-up which is very important. Its purpose is to provide advance information and study guides for programs available for in-school use. Copies of the publication are made available to elementary and junior high school teachers in sufficient numbers so that they may utilize the programs to the fullest extent. Informational copies are sent to senior high schools, junior colleges and administrative offices. I might also state that many of the school districts in the County have an arrangement with us whereby they receive copies of this so that they can have the aid of this information in connection with the use of our television programs and the County's.

Whenever possible we video tape in advance the programs to be presented for in-school use. This year, with cooperation from station KCOP, we have taped eight of our ten programs each week. The other two were live telecasts. Television studio space has been provided in our new Instructional Materials Center and we expect to have adequate video-recording equipment available by fall for doing our own production work.

The cost of our radio and television programs during the 1961-62 school year has been approximately $167,064. This amount includes all certificated and non-certificated salaries, mileage, video taping of programs, broadcast time, our publication, scripts, filming and processing of film, recording supplies and equipment and transfers from tape to film. I might add that as you know, in the Los Angeles City Schools we face the tax increase election. We're right up against our tax limitation and we have had to curtail many of our services because of the failure of that just day before yesterday, and it looks as though this program is going to have to be curtailed next year. On the other hand, the Superintendent is going to recommend to our Board that we continue with our program but it will be curtailed probably from an hour program each day to a half-hour program. It looks as if we will probably just about have to cut the program in half, just because of lack of funds, not lack of interest.

We hope that television can motivate and stimulate the class and the teacher as well as provide

materials and information not readily available in the classroom. Possibilities of demonstrations on television by outstanding teachers and resource personnel from the community are almost unlimited. Events, equipment, material, and information not available otherwise have been brought into the classroom by television. The immediacy of television cannot be duplicated in any other way.

The television teacher and the television lesson are considered as additional resources for the class and the classroom teacher. During each telecast, the class, classroom teacher and the television teacher work as a team. The final values to be derived from the television lessons are determined largely by the classroom teacher, who prepares the class for participation in the lesson, guides class discussion, and plans follow-up activities.

A continuous evaluation is essential if the television lessons are to be a success. Evaluation blanks are distributed to all schools and you have a copy of our evaluation blanks which are sent in regularly by our teachers. This year we have had over 5000 responses from teachers who use the programs on a regular basis. The general reaction to the programs has been good, especially for those which have been viewed in a classroom by one class. We have found very definitely that the single class with a single teacher using the lesson is much more productive in television than to bring several classes together in a larger auditorium.

YELVINGTON Is this at all levels?

CHAFFEE That's true, both elementary and secondary. Our secondary program, as you will have noted, is limited to the junior high schools. We do not have a regular senior high school in class television programs as yet.

In October of 1961, Research Report Number 243, prepared by the Evaluation and Research Section, completely separate from the Division of Instructional Services in the operating division (so it was a completely unbiased evaluation, almost like an outside audit) was carried on. You have in your packet one of the evaluation leaflets which analyzes the program which is carried on in the Los Angeles City Schools. We feel that it is one of the most complete evaluations that we know of that's been carried on in educational television. It was published last October. According to the findings of the report, teachers in the Los Angeles City Schools are overwhelmingly in favor of television as a classroom aid. We learned that fifteen per cent wished to continue the series as it is at present. An additional thirty per cent would have the programs continue, but with modifications. More than fifty per cent were in favor of expanding the telecasts, and only four per cent voted to eliminate them. So the vote was overwhelmingly, by the teachers who were using the program, in favor of educational television.

Our plans for the 1962-63 school year include the continuation of programs in science, social studies, art and English. Now this was written before day before yesterday and so this may be curtailed or modified to some extent. Much is dependent on the availability of funds for our television project. We have gradually expanded during the past five years and we believe that the expansion has been on a sound basis. We are looking forward to the future, knowing full well that we will be able to present unusual educational television programs that will broaden the horizons of our students.

The objective has been and will continue to be the presentation of television lessons which are stimulating and of real value to the instructional program in the Los Angeles City Schools. I might add this, that in a great school system such as Los Angeles with the resources we have, we have felt that we must keep abreast of the times and the developments in educational television. This is a rapidly changing field, rapidly changing from the standpoint of equipment, methods, and so forth. We have felt that we have needed to build up a staff and have the know-how, and that's what we have been doing for the past five years, revving up the equipment. As you perhaps know there's talk and a strong probability of education television in the Southern California and Los Angeles area. I'm sure that our Board of Education, and I know that the Administration is hopeful that this comes about and we hope to participate in that program. If that comes that means almost overnight a rapid expansion and its important that you have the plans, the technicians and the teachers because this is a highly specialized program, ready to go into a program of this type. And so part of what we have been doing in Los Angeles during this five years and expenditures we have been making, have been getting the know-how and getting ready for the big pitch which we feel is here to come as far as educational television is concerned. Now actually as far as the number of students viewing, we have had a minimum of one television set per school, which means that at one time only one class can use it. In the elementary and in the junior high schools, two television sets per school. We have provided for next year (this will be purchased out of equipment bond money which is already available) authorization to go ahead with additional television sets for each school. For wide use, one of the factors you have to consider is the purchase of television sets, at the same time where improvements are taking place, particulary in this type of set. All of these are factors which we are considering in Los Angeles.

Mr. Chairman, it has been a pleasure to make this report to your committee.

FARR Thank you, Dr. Chaffee. Does Senator Stiern have any questions?

STIERN Yes. Just as a matter of record, is this a closed circuit kind of an operation or

CHAFFEE No, this is using commercial television stations. We rent an hour's time from station KCOP. Now, we have looked into the closed circuit. In many respects the closed circuit is the ideal circuit because you can run from four to eight programs at one time and make that available. But we have also looked into the cost with the Telephone Company and so forth and at the present time the costs are so exorbitant for our district which spreads, as you know, all over Los Angeles, that it's almost impossible to do this.

STIERN What I was thinking of, was that it is a little bit more far-reaching than just your district. There's nothing to prevent private schools from cutting in on this.

CHAFFEE That's right and many of them do. We cooperate and we welcome them. Many of the parochial schools, private schools as well as public schools outside the Los Angeles city schools are using our program and we have no objection to that, not at all.

STIERN Is there any estimate as to how many more students are reached through private schools over and above what you have in public schools?

CHAFFEE Mr. Lang, who is our supervisor in charge of Radio-Television is here. Mr. Lang, do we have any information relative to the use of our programs by private schools?

YELVINGTON Pardon me, Mr. Lang, would you come up where your voice can be recorded, please.

LANG We distribute our publication to about 250 private parochial schools in the area. As far as our audience is concerned the last estimate we had on this, which was about a month ago when I was requested to get the information, we had a home audience every day of about 20,000 homes and we had a school audience of between 100,000 and 120,000 children. Of course the signal from KCOP goes from Santa Barbara down to approximately San Diego and out as far as Riverside and San Bernardino.

STIERN It's a little difficult then to tell how many pupils you really are reaching on this.

LANG That's correct, yes.

FARR Can the work you do, the material you have, be made available for instruction?

LANG Yes. School Districts and other schools who would like to have copies of our publication, can purchase them. We have an arrangement with the printer whereby he will give them to any other schools at the cost which he charges the Los Angeles city schools.

FARR I would like to introduce the Committee Secretary, Mr. Al Yelvington, who's here on my left. Dr. Chaffee, I have a couple of other questions I would like to ask you. I wonder if you would describe for the record Title III B of the National Defense Education Act in respect to money that is available for educational television?

CHAFFEE Perhaps we might get more details. By the way I might mention that we have participated in this particularly for the purchase of the sets which are used for in-school viewing and most of the sets we now have in the schools have been purchased under Title III, and next year the additional sets that we will have will be purchased under Title III, where the district pays fifty per cent and the federal government reimburses fifty per cent.

FARR In your statement you said your plans for the 1962-63 year include the continuation of programs in science, social studies, art and English. Now, do you now have any foreign language programs going on presently?

CHAFFEE Yes, we use the Pasadena program. That's one of the reciprocal parts and the latest evidence showed that about one third of our elementary schools are actually participating regularly in the programs. We have, from the standpoint of our elementary foreign language, (that's in a state of flux, as you know) three elementary programs now going on. We have a program in our fourth, fifth and sixth grades using educational television. We also have a program which we've had since 1945 in the Los Angeles city schools

FARR Are you speaking of language teaching now?

CHAFFEE Foreign language teaching in Spanish in the elementary schools, Spanish only. Since 1945 we've

had a classroom program consisting of records and materials that we have developed in our own school system. By the way these have been purchased widely throughout the country commercially, but we developed them in Los Angeles so we have quite a program going there in elementary teaching where they can use the records. So that program has continued to grow. And then we have a program which we introduced last year and which will be continued this year, and we hope to expand it this year, but it looks as if because of funds in our situation it will have to be limited again for another year, of giving instruction in foreign language to elementary children two afternoons a week by specialists in foreign language on an elective basis for fifth and sixth grade students. So we have three programs going at the present time.

YELVINGTON I would like to apologize to the committee for being late. Concerning Proposition Three we just about, or did turn our office upside down yesterday and we just weren't able to make our final preparations. A printed agenda will be here as soon as the committee secretaries can have it run off and then we will return to a logical sequence. I realize the Chairman is being handicapped. My apologies to him and to you.

FARR Thank you very much, Dr. Chaffee. I would like for Roy Bell of the State Department of Finance to come forward please. Excuse me, Dr. Chaffee, do you have a few more copies of your statement? I think some of the other members of the committee who couldn't be here today would like very much to have one. Very good.

ROY BELL, ASSISTANT DIRECTOR, STATE DEPARTMENT OF FINANCE

I am Roy Bell, Assistant Director of Finance, and I must also apologize for not having a prepared agenda for your committee today. Proposition Three also affected me, as you may know, since I'm also the Budget Officer for the State and I will get a written statement to you as soon as possible. Your committee has asked that I discuss the Federal Act that was just signed by the President which has some possibility of financial assistance for educational television and I thought while I was at it I probably ought to run over briefly the State Law which was in Senator Farr's Bill in the 1961 session because in some areas the State Law also influences the application and acceptance of the Federal Grant Program. Then, because of the State Law, I thought I'd just touch briefly on the State Television Advisory Committee and the state role in this process and the problem of preparing the State-wide plan for educational television in connection with our general principle in this state which I think differs quite sharply than in some other states. We are not looking forward to the state getting into the business of running the educational television program, but we are instead looking to local development and also control of this program and primarily using the State level for coordination and assistance to these people and perhaps in the long run working up some sort of a network or something of this nature that would allow them all to have a greater interplay than just regional. I just have one copy of the Federal Law which I'll give you. This is not a grant of funds itself as some people thought it would be at the time. This is primarily the authorization or enab-

ling legislation by Congress which the President signed on May 1st of this year, the purpose of which is to assist in the construction of educational television broadcasting facilities through matching grants and this is construction only and not operation. This Act, Public Law No. 87-447 authorizes appropriations beginning in 1962 and 1963, and for each of the four following years, in an aggregate of $32,000,000 for all five years. In addition, any funds appropriated under this act will remain available until July 1, 1968. This particular authorization will become effective this July 1st. The appropriation, however, we hear from Washington, cannot possibly get through until September at the earliest. We're hoping that we get it in September and we're trying to get ready for it. I think it's important for us in California to realize that this so-called "pot of gold" is really a maximum ceiling of a million dollars for the full five-year period - no state can get more than a million dollars from them, and a million dollars doesn't go too far. It goes a long way when you've got a combination program with local support and everything but still it's not a panacea that you may think when you consider that your averages which are always misleading, but anyway just for the sake of stating them, of the sixty states that are now in existence will run about $500,000 for construction and about $250,000 for yearly operation and this of course is always misleading because it includes all the states using much less than that and a few larger ones that will run up toward a million dollars. You can see that a million dollars spread over five years is not going to cover a major increase for local government in this area and because of this it becomes even more important that we spend every dollar of the million dollars in the best possible way to reach the greatest number of people.

Now to obtain a grant for construction of educational television facilities this general law says that an application must be submitted to the Secretary of Health, Education and Welfare which will assure him of the following conditions:

(1) that the applicant is either responsible for supervision of the public elementary or secondary education or public higher education within the state, or it is a State Educational Television Agency, and in this pattern many states have television agencies which are authorized to actually operate their own state-wide system and this is not true in California, or a publically supported college or university, or a non-profit organization whose primary purpose is to engage in and encourage educational television broadcasting and who would be eligible to receive a license by the FCC.

Under the pre-conference changes in the Bill, this was one of the very significant items that was added, the fact that we recognize in California the equal role of the community non-profit educational television along with the basic school and higher educational television responsibilities. In addition for acceptance of applications they must also

(2) be under the control of the applicant as the person qualified as the applicant (this is primarily to insure proper control by the State).

(3) that funds will be available to finance the non-grant portion of the construction and also a sufficient operating budget to be able to run the State and

(4) that such facilities will be used only for educational purposes.

The Act further provides that in order to assure proper coordination for construction of educational television broadcasting facilities within the separate states that have the State Educational Television Agencies, each applicant for a grant for construction must notify the State Educational Television Agency of each application for a grant under this federal program and the secretary then also advises the State Television Agency as to the disposition of that application when it comes in. Here is one point where the state law will refine this even more. It is in determining whether or not we will approve an application for a grant, the Secretary is bound to the following criteria and this really then is the purpose for the federal grant program:

(1) that the grant will achieve the prompt and efficient use of all educational television channels remaining available. Their primary purpose is to activate as many of the channels as they can which have not yet been activated.

(2) that equitable geographical distribution of educational television broadcasting facilities are made throughout the state - that it isn't just all in one area, that it is disbursed geographically.

(3) that provision of ETV broadcasting facilities will serve the greatest number of persons and serve them in as many areas as possible, so that, in effect, they are not only just trying to get more channels on the air but that they be disbursed geographically in relation to number of people, which in California involves this problem where ninety per cent of our people live along the coast in a rather limited strip and ten per cent of them are spread throughout the valleys other areas of the state.

In addition to these limitations for which the Secretary can approve an application, it is also limited to certain percentages of the total amount of the grant. The total amount made by the Secretary may not exceed seventy five per cent of the amount of the total construction cost of any project. This percentage is arrived at by awarding up to fifty per cent of the amount which he determines to be the necessary cost of the new project and in addition he can give twenty-five per cent of the amount which in effect the various agencies already have spent on construction for their existing television equipment, etc. There is one limitation on here which may or may not be desirable from individual standpoints. I personally don't like to see it too well. That is that only fifteen per cent of this money can be used for installation of microwave equipment, boosters, transmitters, computers, translators, the type of thing which doesn't put a new station on the air but in effect merely broadens the coverage of existing stations. However when you have remote areas like California has, with few people and relatively small resources at the community level, it may be desirable to extend your network rather than just have a whole job of new stations with their heavy capital outlay prob-

lems.

In defining the term "construction" as applies to facilities, it means only the acquisition and installation of transmission apparatus and necessary equipment, such as towers, microwave boosters, translators, mobile equipment, video recording equipment, closed circuit type TV, but it does not include the cost of structures to house these, so that you can't apply in any way the cost of building a building to put your studio in or that sort of thing.

The Bill also requires that the facilities provided under this Act must be used for the purposes of educational television for at least ten years or they have a federal come-back on you to get their percentage of the cost back from you. They also have written into the Act that the Federal Communications Commission must cooperate with the Secretary of Health, Education and Welfare in establishing channels and giving them advice technically. There is also a provision which is probably important to those who get the grants, that it is also subject to federal audit, which means that you can't just keep all your costs in your pocket, you must have something that auditors can come in and audit, or they may be unhappy with the way you use your money.

It specifically prevents any federal agency from influencing in any way the educational content of the program, and this of course is carried over also into the state level, where no one at the state level connected with either the advisory committees established by the state or the coordinator who is responsible for coordination of the programs with the Department of Finance, can influence the the educational content of the material.

As far as the state law goes I think probably we ought to mention some things in regard to state laws, particularly as they apply to this new Federal Grant. Before I do that I should say that this enabling legislation typical of federal law, leaves a great deal of the definitions and "rules of the road" to the Secretary of Health, Education and Welfare to propose the rules and regulations which are not yet out. They are working on them and we have indication that at least they will tend to recognize the individual states' wishes in regard to how a state agency operates and how the state agency is controlled within the state, so that even though the federal grant is much broader, the rules and regulations of the Secretary of Health, Education and Welfare may say that they would recognize the same laws which the state applies for such matters. In our own state laws, as I mentioned before, the basic principle is that California is not going to operate at the state level, a statewide system of television and doesn't intend to. We're very glad to see the local communities and local schools develop strong educational programs in television because this is the best possible way that they could be sold internally. However since we have several structures in the state, the Public School System and of course many different counties and districts within that structure, the state colleges and the universities independentally operating in this area, and the community television area of the non-profit type within the state, we are going to need a great deal of coordination as we go along to make sure that we get the best possible use out of the money we're spending in the

state without violation of any local control.

So the state law, passed in 1961, and I believe authored by you Senator Farr if I'm not mistaken creates in the Department of Finance a television advisory committee of five people. These five people are: The Director of Finance or his representative who is I, a representative of the Trustees of the State College System, a representative of the Regents of the University of California, a representative of the State Board of Education representing the Public School System, and one member from the existing community educational television channels, who has been appointed already by the Governor on an interim basis, Mr. Jim Day, who is also on your program today. All five people have now been selected, two have been announced and we will have an announcement out very shortly of the selection of this committee. This committee will not however, be operative on an official basis until the federal government actually passes an appropriation of cash for grant purposes. So what we're doing really is operating on an interim basis informally to make sure that the state is ready to take advantage of the federal grant program.

In addition to this the committee is just an advisory and guidance committee, but a television coordinator is provided in the Act who shall be an expert and experienced in television planning, promotion and administration. In other words, not just a technical man who is only there for purposes of giving the best experience in regards to equipment and things of this nature but an actual planner, a person who can lay out a state plan as to the best possible use of television. He will have this advisory committee to help him and guide him on the policy areas. This coordinator also cannot be appointed until the federal law appropriates funds. When it does his job will be to first prepare a state plan, and I am assuming that this will also be required by the federal regulations before we can apply for funds. He will also be the official state agency to process applications for federal funds under this construction grant program. Our state law says that if federal government kicks in any money on operating expenses such as NDEA money for specific projects and this sort of thing, that that doesn't have to come through them, but any construction project for permanent stations and things of this nature, will have to come through the State Coordinator so this modifies the federal act which is not that specific. In addition

FARR Excuse me, does he work under the committee?

BELL He will work under the guidance of the committee, but directly for the Director of Finance so that he will be an alligned agent of the Director of Finance as regulated by the state government. He will also advise the Federal Communications System on the allocation of channels. The federal law says that any school district or anyone else can apply for a channel. Our state law says that he shall advise the FCC as to whether they should grant that channel or not and this is because in the development of the state plan where it is necessary to widen the coverage in the state to cover more people, it's quite possible that some of the richer districts or those who are more progressive may be applying for channels within the already covered area of an existing station and this would

probably not be the best use of the very short one million dollars that we will have coming to us, nor really as a use for the existing channels which we can still get, we should spread the channels as best we can. Because of this our state law has said that our coordinator, in connection with the state plan will have something to say to the FCC on the approval of these applications (that's on the license, not on the construction). In addition his job will be to coordinate the activities of all segments in this field, that would be the public school systems, the colleges and universities and independent people, and he will be the clearing house for information as well, clearing house for all types of information in regard to possibilities of additional financing and types of specialized equipment, what other people are doing in the area and things of this nature.

That is the state law, basically. It sets up this five-man committee of which the members are composed of the four strata of the systems now developing locally in educational television, and has the participation of the Director of Finance because obviously along this line, to develop this type of program we are going to need a great deal of financing and we're going to need the best possible use of our dollars. Also the state right now is spending over one billion dollars in assistance to education, both at public school level and at the higher education level, and so we're certainly interested since the greatest part of our entire budget is going into this area, to see if there are any improvements we can make in the educational system through this without costing the state a great deal more money.

As I said, the committee has already been selected and will soon be announced and we will meet immediately to organize, and the first action we will probably do, in the interim until we are officially a state agency will be to recommend a coordinator to the Governor, that is one of the very first things we have to do. We probably should obtain a complete inventory of Ed TV throughout the state. Now this is obvious to most people but I think we probably still for the record ought to have an official inventory. We must immediately get together with the health, education and welfare people to discuss the federal rules and regulations which they are preparing, because they are going to actually make this interpretation which does or doesn't allow you to get this money. Also the committee, advisory and guidance though it is, will probably, because of the federal grant program be influenced greatly by the purposes of the federal grant program, which I just want to repeat quickly again are to get the greatest use of the channels we have assigned, to cover the greatest geographical distribution in the state and the greatest number of students, so the committee is undoubtedly going to be influenced in this by the federal direction of its grant programs.

Just touching on the plan itself, because this is the basic document which the state has to start with, the state law says that the plan shall assure the most effective and economical utilization of human resources, public funds and channels of transmission, and that's all it says about it. These plans vary in various ways, depending entirely on how the state wants to go at its own state responsibility as to what is included in it. Here is one that was done recently for the State of

Hawaii, which belongs to Mr. Day and I had better not give it to the committee, but in effect it goes through and makes a survey of what they need, what the conditions are within the state in the various types of local agencies and what is needed. It's particularly pointed toward instructional television as opposed to the broader field of educational television, but it includes both and I think we will too. It goes into the areas of transmission, programming, technicians, receivers, this sort of thing, the type of coverage that you really need to apply to a plan, and in our state it will be complicated by the fact that we have so many entities in the picture, so our problems of coordination in putting a state plan together are going to be much larger than someone starting from scratch like Hawaii where they don't have any.

In addition I assume that the plan would have to touch on financing problems in the state whether we do it locally or try to tie it together as a state-wide problem, I don't know yet, and it will also of course stress our principle in California of local development and control. The plan is going to have to be hurriedly done in order to get ready for grant programs so it is going to have to be revised and refined and in doing this probably our committee will explore, with the coordinator, areas such as whether we can devise some state-wide network or some other service such as a film library, something of that nature, which will permit us to cover with less expensive equipment various areas of the state where our population of students and adults in the educational area will not really warrant full expense of facing it. I think also we will eventually get into the problem of uniform curriculum for the state. Now that sounds as though we're passing past this point of content control but

FARR Would you repeat that, please?

BELL I'm sorry. I was mentioning the fact that I think this committee, particularly since it has on it three educational representatives, will probably have to consider the problem of uniform instructional curriculum. Here I'm thinking of such areas that lie in the future as the teaching of foreign languages and things of this nature. If we're going to develop this type of program as an assistance to teachers, in being able to stretch our teachers farther and allow them to do a better job, I think that this type of thing is going to require the Department of Education and the Public School System and the college and university working with them as teacher-training institutions, to develop perhaps a more uniform approach to foreign language teaching, in order to provide a facility to meet the problem we're going to have when we get this requirement in 1965.

FARR Answer this question. Do you think the foreign language requirement as set forth by the legislature can be met without getting into educational television rather extensively?

BELL I think, or I hope Mr. Clowes is here from the Department of Education to testify on this and he's already on record on this. My answer is that it probably will not be met as well if you don't go to something like educational television. You will not have the vast number of teachers you are going to need to be able to conduct a program adequately. You can do it all right, but it's less

experienced personnel, people who aren't native to the tongue, things of that nature. You're not, I'm afraid, going to be able to do as adequate a job unless we are able to build an instructional television program for this particular subject.

I just want to finish very quickly by saying that in the future our advisory committee will probably be revising our state plan, exploring inter-system coordination, because this is one of the purposes of having all three of the educational systems on this board, and here I think we will go a little bit into the philosophy that the Coordinating Council for Higher Education has set up where you're trying really not to control competing systems but coordinate between them. Then we'll probably be reviewing the role that the state should play in the total picture. We have to watch this carefully so that it does not conflict with our general principle of local development and control, but apparently somewhere along the line, the state is going to have to step in with some assistance or perhaps network facilities or something of that nature - something of a service facility if nothing else to local stations. Probably we will be exploring the better utilization of teacher time, and why I say that is that it ties directly to this foreign language instruction we were speaking of, effective space utilization in not only the schools but our colleges and universities and here the state has a special stake that we're interested in. We'll definitely be in the financial assistance area eventually although not immediately. We have no plans that way. We'll also try to give advice in selection and purchase of equipment, perhaps we might even provide centralized purchases at a lower cost to the people who are interested because of the state centralized purchasing advantage we usually do pretty well on a per student

FARR Don't you make that service available now to the schools?

BELL At the present time recent law changes allowed local districts to buy equipment which exceeds $500 through the state. I don't know how extensively they have come to use it; I think that the districts don't use it as much as cities and counties, the other types of governments. Mr. Cheyney from the Department of Finance will be on your agenda this morning and will cover this specific point.

We probably won't, at least I hope we won't and I don't think anybody wants us to, get into such areas as trying to solve the problems of residual rights of teachers under television, or things of this nature. I think these are problems a professional should work out and they are something that they should look to the state for to try and solve this type of problem. I don't see that our role is with anything like that at all. I just stress it because I think that it's the type of thing we shouldn't be in.

In addition to instructional television of course lastly the committee will be looking at the broader aspects of cultural television and public-interest type programs, things which are not classified as instructional television but do hit the broader area of educational television. I think our initial interest and our initial push however has to be in the instructional area. I don't like to ignore the other and I know it can't be ignored but I have a hunch this first year we are going to be

most heavily in the ITV area.

That's all I had, Mr. Chairman. My purpose here of course is just to set the background of what the law is, both state and federal level. I'm going to emphasize the fact that the million dollars is not a bottomless pit and it is not going to go too far. I don't think that you could even get your television station in Los Angeles on the air without taking the whole million, maybe you could, I don't know. But I do know that the administration is interested in getting a station here in LA and maybe a portion of this money you can have. If you have any questions

FARR Thank you very much, Mr. Bell. Any questions from Senator Stiern?

STIERN I'd like to mention this one million that could be used for California. Is this, how does this figure compare with what would be used in other states? What would be the allowed

BELL Well, it's only $32,000,000 in the whole appropriation and no more than one million can go to any one state. They have a maximum of this. It could very well be that the Secretary of Health, Education and Welfare might break this to where it is not more than $500,000 or $600,000 for any state therefore be able to cover (inaudible) and

STIERN I was wondering if you knew anything about any phrase in there about inter-state cooperation, for example a Reno station could take the East Sierras and

BELL Yes, in fact the federal people I think in their rules and regulations will recognize the fact that in certain areas, particularly in the West where our population is more widely dispersed, any type of inter-state system will be acceptable under this and will probably pro-rate the cost from this station so that down in the Imperial Valley they might be dealing with Arizona and up around Reno they might be going over into the mountain counties of California; up in Oregon the top counties. It is quite possible then, that this would extend beyond state lines but these will probably also have to be developed with local cooperation. I did want to also say one thing. other When you were asking about private schools using the open circuit broadcasting, I think that California is rather unique in that it has over ninety-four per cent of its children in the public school system as opposed to states like New York, which has actually less than eighty per cent of their total students in public schools. Being a western state with a western condition we run pretty heavily to public school financing and therefore I think the use by private schools of this type of thing is particularly heavy maybe in San Francisco and the rest of the state not so heavy. Most of your program and most of your work is going to be in the public school rest of this is going to develop almost on an independent basis without (inaudible)

STIERN With the traditional economy of local school boards, we're going to get into some touchy situations.

BELL We certainly are. I really think that where we're going to stub our toe the most, and this is one of the reasons why we have such a stated principle and philosophy of non-state control, that it seems wherever you try to develop on a region, inter-school, inter-district type of thing, the first

thing you run into is the fact that the major concurrent of the board is their own control. We will let a district develop a closed-circuit system of their own rather than go out and share one. It may cost up to fifty times more than (inaudible). On the other hand, they do then maintain their control pretty effectively. I think here perhaps Jim Day could discuss this. I hope he will; I know he had planned to and I think we ought to approach him. What you really do is develop a program of excellence and you get it on the air and people begin to see it and watch it, and they become converted to it. In other words, this is a job largely of initial talent. Once you get the program to this degree of superiority and excellence other people will come into it readily. This plus the fact that before you start you quite often get a group of people together who are willing to accept each other's recommendations. Around the Northern California areas, though, we found that they will start with a few selected people putting the program together and the program itself is to sell it. A district will say that they don't want to have anything to do with it, that they don't even want to be in on the planning, this sort of thing. They don't want to be influenced by neighboring districts. Then once the program is on the air and it begins to show its superiority they'll come in and join with them. I think this is the real future advantage to using this area, that almost all of this work tends, just because it is put out on the air and they have to spend a lot of time on it, to become a very superior type of program and in the long run then will sell itself to most of the viewers. The more people you sell of course, the less expensive it is. You get your program cost down to about sixty cents per pupil per year and still put on a superior program you're really doing a service to the school system, and this is where we have to look to the future on this, being able to provide this quality in our future market of lack of teachers and difficult curricula coming up where you don't have the supply of teachers readily to teach this sort of thing.

FARR Any further questions on this, gentlemen? Yelvington?

YELVINGTON No questions.

FARR Doctor, I'd like to ask you one or two questions. The local school district comes in with an application and I understand you will review this application as it affects the whole state-wide picture and see how the plan for this school district fits into a state-wide network. Is that correct?

BELL The federal law only requires that that district report to the state agency that they have asked for a channel. However the state law says that we actually have to consider how that will tie into the state network, whether it is a good location, whether it is to the state's advantage really as a total, that that channel be put on the air or whether it was to the point where there were only a few channels left, whether they are better utilized in some other location. So, yes, the state law is more restrictive than the federal law.

FARR You're speaking in respect to the million dollars?

BELL No, I'm speaking now of the application for a channel and this is also true however of the application for a million dollars. The federal law merely says that they will notify us. The federal law

does not say that the state has to approve. However the state law says that we shall consider it and we shall review it in keeping with our state needs. Our state law does not specifically read, (I can't read into it) that we can deny a request of a local user for construction costs. I think probably we would at least indicate to the federal people what our opinion of it was, and they might be influenced by our opinion.

FARR Thank you very much. That was a very comprehensive statement. You will have a written statement

BELL I'll get a written statement in next week.

YELVINGTON Senator Stiern, Senator Farr, I would like to advise you and announce that Senator Fisher, Senator Hugo Fisher from San Diego, had intended to be here this morning but that he has been summoned to Berkeley by the Governor. I have no idea for what purpose but he offers his apologies and otherwise you would have had a full subcommittee.

FARR We will take about a five minute recess. (Recess)

JAMES DAY, GENERAL MANAGER, KQED, SAN FRANCISCO, CALIFORNIA

Mr. Chairman and members of the Sub-committee, my name is James Day; I'm general manager of KQED in San Francisco. I've been asked to testify this morning on behalf of the community television stations in California, there being two, KQED, Channel 9 in San Francisco and KVIE

FARR Excuse me, can you all hear Mr. Day back there? Would you speak a little louder please?

DAY All right. KVIE in Sacramento.

Close upon the passage of permissive legislation by the California Legislature in 1957, KQED embarked upon its first program of instructional television for the classrooms of the Bay Area, which was tentative but has been proved a highly successful adventure in the application of this new medium to the problems of quality education in the Bay Area. Our fourth year of this service was concluded late last month, and KVIE in Sacramento concluded its second year of instructional television service to the classroom.

The quality and acceptance by the schools of this service has grown through the years as the techniques of production and the techniques of using the service have developed. This past year we had a total of 300,000 elementary and junior high school students enrolled through both stations and actually divided about half and half, approximately 169,000 in the Sacramento area and about 149,000 in the Bay Area, were enrolled through one of the two television instruction services. This enrollment embraced more than 140 separate school districts in the Bay Area including private and parochial schools, actually about 90 public school districts and the balance were private and parochial schools. In the Sacramento area it involved the participation of 119 school districts.

The number and variety of classes presented through this service has grown during the years we've been on the air, since the best that is produced is retained on video tape or kinescopic recording and are reused in successive years. This past semester KQED in San Francisco offered the schools 18

separate classes for a total of twelve hours of instruction each week. Each class is repeated in the course of the week to give teachers an alternate day and time to use the program. KVIE, working with the Committee on Public School Telecast Service in the Sacramento area offered the schools twenty separate classes each week.

The selection and development of the television curriculum is made, not by the television station, but by the contracting school districts in the area through cooperative councils set up usually by the County School Systems. Some idea of the emphasis and scope of the curriculum may be gained by examining very briefly the instructional television service which KQED has just concluded this past spring semester:

SCIENCE: This would include in the field of science three grade levels of science, two being taught by one professor, this being Professor Lawrence Swan of San Francisco State College, a professor of biology, teaching science in the third and fifth grade. This is elementary introductory science and the lessons were tied to the state-adopted California text, "Science in Our World". The third grade level of science which we offered this spring was roughly an eighth grade level and this was in space science. This was not the hardware of space but rather the mathematical, chemical, and physical principles underlying an age of space. This too was taught by a college professor, Professor Robert Stollberg, of San Francisco State in charge of science education, and was partially underwritten by Lockheed Missile System and by Pennsylvania Electric. This to our uncertain knowledge is the only space science being offered in the public schools at this grade level.

MATHEMATICS: The second area, that of mathematics, we offered this past year two grade levels (roughly 4th and 5th grade, I say roughly because the school often shoots at the grade level in which they wish to use this. We arbitrarily say this is intended for 4th and 5th). Both courses were taught by an elementary mathematics teacher, the best we could find in the Bay Area, being Joseph Moray, with the assistance of a committee of elementary mathematics experts and it incorporated some of the newest techniques in the teaching of mathematics. A sequential third year will be offered in the fall by KQED.

SPANISH: The third field is that of Spanish and here we offered this past year three grade levels of Conversational Spanish, 4th, 5th and 6th grades, emphasizing the conversational aspects. These courses are taught by Dr. Manuel Guerra. In addition to these three grade levels we offered a fourth course in conversational Spanish supplemental to the 4th grade level, in other words there were two 4th grade level conversational Spanish courses. The supplemental course was produced by the Midwest Project on Airborne Television in Chicago (this is "Que Tal Amigos") and was added this past year.

FRENCH: The next that I would mention is the area of French instruction in which we have taught two grade levels of conversational French, the program produced by the Heath DeRochemont Company and featuring Madame Anne Slack, and you'll hear more about that later I'm sure.

CURRENT EVENTS: Finally, in the area of Current Events we've offered a weekly Current Events class for the junior high school level which featured Edward Radenzel, foreign editor of the San Fran-

cisco Chronicle. Mr. Radenzel was given access to newsreel clippings from the NBC Video Tape News Service and was able to use that in his weekly Current Events class.

In addition to the classes I have mentioned produced in San Francisco or by Heath DeRochemont, we also offered the schools in the Bay Area four additional classes produced in Sacramento by KVIE - two in the field of music for primary and elementary grades; one in speech improvement for the primary grades; and one in language arts for the elementary grades. KVIE, in turn used four of our programs in its school service. This exchange is made possible by a privately owned microwave link which joins the two community stations in California, making it possible for us to broadcast programs simultaneously if we wish.

While the primary emphasis in these television lessons has been upon the supplemental instruction of students in classrooms, both stations have engaged in several programs of teacher training.

The cost of this service to the contracting school districts - exclusive of the purchase of television receiving sets - has been quite modest: In the San Francisco area we have charged sixty cents per student per year to the contracting school districts; in the Sacramento area it is fifty cents per student per year. San Francisco is contemplating an increase next year to seventy-five cents per student per year in order to meet the increased costs to the service and the increased service which we propose next year.

Experience has taught us that the instructional television service is successful in direct ratio to the skill of the classroom teacher in integrating the television program into the normal classroom procedure. To assist the classroom teacher in doing this and in a sense making of herself an ally with the television teacher, we have to provide increasing volume of study materials to the teachers in the schools. A basic manual for the teacher, providing content information on all series, together with suggestions for preparing the class and following up, is augmented by particular manuals for specific courses. Just to give you some idea, this is an idea of what teachers have been given this year in just our spring program service and this isn't the entire thing but it shows you that we are really in the publishing field providing teachers with these teaching aids. We have as a matter of fact printed over a million pages of study materials for our spring instructional television service.

The effectiveness of the instructional television service is best measured, we think, by its increasing acceptance and usage by the schools and a growing demand by the school areas that lie just on the fringe of our signal who are asking us to find some way to get the service to them. The question: "Can Television teach?" has been answered so frequently in the affirmative that we no longer can properly conduct controlled studies on this question, although Dr. Wilbur Schramm of the Institute for Communication Research of Stanford University, has synthesized some 393 controlled studies of instructional television both in this country and abroad. In 86% of the cases studied at least as much if not more learning took place by television as took place in the traditional classroom method. Dr. Schramm concludes that there can no longer be any doubt that students learn efficiently from

instructional television. A copy of this summary of these 393 studies that have been made is included in the material that we have provided for the committee.

I have been asked to address myself to the specific question of community television's potential contribution in helping the schools meet the 1965 deadline for foreign language instruction beginning at Grade 6. I have already made reference to the foreign language instruction which we are now carrying on and I think have been offering successfully at the elementary level. The need for this assistance has partially accounted, we believe, for the increasing use of television by the schools in our area. We are told repeatedly when new school districts contract one of the reasons they are doing this is to prepare themselves to meet the requirements of the 1965 law. We propose to continue to improve our foreign language instruction and to add to it. We know that classroom programs through television for students are not enough.

In recognition of the need to teach teachers as well as students, KQED and the Bay Region Instructional Television Education Board which is our coordinating group for the schools in our Bay Area, have prepared a plan for in-service training in Spanish to begin in the fall of this year. This plan contemplates twenty-seven televised workshops to be shown twice each week to assist teachers in Grades K-8 to develop a greater sense of confidence in teaching Spanish, a greater linguistic ability in the language, and the development of skills in the teaching methods and techniques applicable to all elementary grade levels. It is hoped that this project will be jointly financed by the school districts and by National Defense Education Act Funds. Our application is now in Sacramento; no disposition as yet been made of it. Details on this proposal have been or will be furnished to members of the subcommittee. In addition I have brought with me Dr. Peter Presta, who is the Foreign Language Supervisor for San Francisco State College, and he will be the director on this project in the event that it is funded, and Dr. Presta is prepared to answer your questions on how this in-service Spanish workshop will work next year.

We believe this in-service workshop project is unique and holds very high promise for increasing the effectiveness of our foreign language programs that will be tied to the classroom teaching that we do and will do in the future. However the measure of effectiveness of a program of this sort is elusive at best. Unlike certain exact sciences, the most valid testing of students in foreign language courses is not the precise recall of information (or vocabulary lists), but rather the individual student's ability to respond conversationally. As the spoken, rather than the written response is most often called for at the early stages of foreign language learning, very few tests have been developed which can be relied upon to test classroom achievement. This is not so in the later stages of language instruction.

So that the acceptance by the schools of our foreign language instruction is for the moment the best index we have of it's effectiveness. It should be clearly understood, however, that KQED is not advocating the sole reliance upon television for meeting the requirements of this law for foreign

language instruction. In fact our experience would indicate that the more teacher aids, manuals, recordings, etc., that can be furnished the teacher, the more effective the result would be. We encourage the foreign language consultants in our school districts to use the KQED programs as a resource. It is not a case of either television or the foreign language consultant in the district; it is in our minds clearly a case of both being needed if we are going to meet these goals.

I would like to draw your attention to another aspect of television instruction, unrelated to elementary foreign language instruction, but we think it is relevant to the use of the medium to improve the quality of our education. From June 18 to August 23 of this year, KQED will offer a televised course in Elementary Composition for high school students preparing to enter college. This course is designed to substitute for the Remedial English courses being offered at most institutions of higher learning to entering freshmen who fail to pass their so-called "Subject A" examination. At the University of California, for example, approximately 50% of all entering freshmen fail this examination and must take "Subject A" to make up the deficiency and they make this up, as I understand, at their own expense during their first college year. The details of our televised course have been worked out in conjunction with thirty-one universities and colleges in the Bay Area and they will be cooperating with us in this. An outstanding teacher has been selected, a teacher recommended by the University of California as one of their best "Subject A" teachers. This initial experiment has been underwritten by the Ford Foundation, though each participating student will be required to pay a registration fee to cover the costs of administration and the grading of papers. He will be required to write ten compositions during this course. If it can be successfully demonstrated that this remedial course can be taught by television, then we foresee the day when our colleges and universities can dispense with the teaching of what is in effect a high school course. In other words, if a student fails his "Subject A" examination as a senior in high school, he will have the opportunity to make up this deficiency by television. We will broadcast this course perhaps three times a year. If he cannot pass the "Subject A" examination at the conclusion of the television course then perhaps he would not be admitted to the college or university of his choice. This of course is what we foresee if it can be done successfully.

The instructional services I have referred to in this statement are, as you gentlemen know, only a part of the educational and cultural services which California's two community stations are presently offering to their audiences. If these services are valuable, and we have no reason to doubt that they are, then the question that we must seek an answer to is how we can make them available to a larger proportion of the citizens of the State of California. Both existing community stations are seeking to do this through the extension of their signal coverage to fringe areas by means of so-called translator stations. These, as you probably know, are low-powered, inexpensive, unmanned repeater stations that repeat the signal on an ultra-high frequency channel. KQED currently operates one such translator on the summit of Mt. Diablo to serve the schools in the Walnut Creek-Concord area. We are

at the moment working with school systems in Santa Cruz, Santa Clara, San Benito, Monterey and San Luis Obispo counties to extend through translator stations our service to the schools in these areas.

YELVINGTON Pardon me. What is the status of that translator station?

DAY The one that is presently operating

YELVINGTON The one at Loma Prieta I mean.

DAY Well, the one that we are now operating is on Mt. Diablo. The one at Loma Prieta, the status is that we are making preparation to file an application on behalf of Santa Cruz County Schools for the operation of a transmitter on Loma Prieta to serve the Santa Cruz area. This we hope will become a point from which we can then project one or more transmitters in the Salinas Valley and the Monterey Peninsula area, and hopefully down as far as San Luis Obispo.

YELVINGTON Do you have any time prediction on when

DAY No, we're simply assisting the schools. The time, I suspect, may be up to the schools. Because as Mr. Bell has pointed out, the central aid to ETV Legislation places a severe limitation upon the amount of funds that can be used repeaters, translators and microwaves, we don't expect this to be of significant help to the schools in getting these repeaters on the air.

The translator stations can do little more than extend the coverage to the fringe areas of existing stations. More is needed. ETV stations are needed in such cities as Eureka, Redding, Fresno, Bakersfield, and San Diego, just some important cities at random. But most importantly, an educational television station is desperately needed in our most populous city of Los Angeles. Except for Los Angeles, where the complications of financing or acquiring a television channel are enormous, as Mr. Bell pointed out that federal legislation is not going to be a great deal of help in acquiring a channel here; except for Los Angeles, we hope the federal legislation will be of assistance in getting stations in these areas. Now I'm oversimplifying the problem. There are complications to it; in Redding, for example, the FCC has asked the educators to come in in a comparative hearing with a commercial applicant and to prepare testimony for the hearing is going to cost them $10-15-20,000 just to apply for the channel. So there are complications. But we know that it will take more than federal aid to get these channels on the air; it will require the resources of the local communities and the state if we are to realize a system of ETV stations that will make available to the majority of our classroom students and adults alike the opportunities for quality education and lifelong learning that have now been demonstrated by the two existing educational television stations in California.

FARR Any questions Senator Stiern? Yelvington?

YELVINGTON Yes, I have some questions, that is the last point you made that if educational television stations, or more of them, are to be brought into existence, you mentioned that it will require financial assistance from the state. What form do you visualize that assistance

DAY It might very well be in matching funds in order to apply for the federal funds under federal ETV legislation.

YELVINGTON If I recall correctly last time we reviewed the status of instructional television, the educational television stations were not in favor of any state subsidy but the failure of getting an adequate appropriation of federal funds has changed that picture. You will be making a request for state credential.

DAY The way the educational television stations are developing in California this is still a matter of local control. I can speak only on behalf of our own corporation, not on behalf of the cities I have mentioned and I have no idea at the moment how they wish to pursue this.

YELVINGTON But this is what you foresee.

DAY Yes.

YELVINGTON I see. Does the KQED take the initiative in developing the courses that you have outlined and developing the material, or do you wait until there is a request from the county schools office or from the

DAY In some cases we have taken the initiative with the help of the schools. This was true in the course in Space Science; it is true in a course that we are proposing next year to go with Space Science at the junior high school level. This would be a course in the elements of science as manifested in chemistry. Our proposal is to provide junior high school students with this course in science that would be taught by the head of the Chemistry Department of the University of California. Now we take the initiative here, but we work with the schools. The schools usually take the initiative in developing the curriculum; we are not forbid to do so as long as we work with them and they are prepared to accept our suggestions.

YELVINGTON But the material and the course is developed under the auspices of the station rather than the schools. Do you select the instructor, and so forth?

DAY The instructor is jointly selected by the schools and by the stations, since we're in a sense both, each seeking different qualities. Once the instructor is selected, the instructor, with or without an advisory committee and most usually with an advisory committee, then begins to prepare the course outline and the study materials. The station assumes the responsibility of studio production. The schools assume the responsibility of curriculum development.

YELVINGTON You mentioned the in-service workshop that will take place. Is the purpose of that to train non-foreign-language-speaking teachers to make use of the television instruction; in other words to actually expand the foreign language instructional staff without creating more foreign language teachers?

DAY I'd like to shift that question to Dr. Presta, if I may who

FARR Would you come forward, Dr. Presta, please? Would you just identify yourself for the record, Dr. Presta?

DR. PETER PRESTA, FOREIGN LANGUAGE SUPERVISOR, SAN FRANCISCO STATE COLLEGE

Peter Presta, Foreign Language Supervisor, San Francisco State College.

Your question had reference to whether this was going to apply to non-speakers, is that it? Those

who know no Spanish.

YELVINGTON Correct.

PRESTA The fact is, I think that our program, as it has been envisaged now, will be of interest to those who do not know the language as well as those who do have some knowledge of it. This is for elementary teachers, whether they have had subjects in it or not. Of course the results are not going to be the same as those who who have had no language training.

YELVINGTON But you do visualize it as a means of expanding teachers available to schools for instituting a foreign language instruction program?

PRESTA Yes. This would be an expansion. In other words there is some need for additional kinds of training. This would not be the same kind of work that one might take at an extension school. This would be specifically for the job we have in mind, so that the things that they would be asked to do, the preparation material that we want them to work with, all of these would be specifically aimed in this direction.

YELVINGTON But it is pointed towards the ultimate goal of preparing or enabling the schools to meet this 1965 deadline?

PRESTA Yes, this would be it. This is one of the main objectives.

YELVINGTON Is that requirement the thing that gives impetus to this school?

PRESTA Well, I would say that it is because we have found that there is such need for additional teachers and so this is an additional road that we might explore. We know that programs of this kind have to be worked out and we do not intend this to be the end, that is not for the short twenty-seven programs.

YELVINGTON But basically before the 1965 deadline can be met, I would assume your opinion is that more workshops will have to take place and we'll have to see the result of what your workshop is. Is it the only workshop taking place in the State?

PRESTA It is the only one that I know of that is aimed particularly at teachers. The idea here is that regardless of the efficiency of the teacher (this has been discussed in our committee work) that there is a basic core, a basic raw material that an elementary teacher should have. This will not be aimed by the state at teachers who have had one year or two years or three years, but we hope be aimed on this program at the beginning teacher, the teacher who has nothing other than regular credentials but had had nothing in a language.

YELVINGTON But your workshop will be pointed toward preparing teachers to use your course over KQED and not necessarily television instruction in foreign language generally, in other words, a teacher who went through this workshop would not necessarily be able to pick up, we'll say, the Heath DeRochemont program on foreign language instruction; that may or may not be prepared for it; that it would be pointed toward your station.

PRESTA Of course the Heath DeRochemont program is not yet

YELVINGTON That was hypothetical.

PRESTA All right. Let's assume that a commercial program is forthcoming and this is ready. The purpose of our program, the KQED program, would be set up so that teachers will have two things: (1) competency in the language and (2) a know-how in regard to method, in other words, what to do with the material. Because actually learning a language, whether we are adults or whether we are youngsters, we still have to start out at the beginning. Now we may take different routes, we may use different materials, we may have different activities to perform, but we feel that the program as set up will give teachers a new insight, that is beginning teachers a new insight into what language teaching is. This is due to the fact that in the past the experiences that we have had in learning a foreign language have been shall we say, unfortunate in so far as maintaining any kind of language proficiency is concerned for establishing such a program. And for that reason the thing that we will do will be somewhat different.

FARR Would you speak up a little. I think it's difficult for some of the people in the back of the room to hear you.

PRESTA This of course is largely the result of the National Defense Education Act Institutes. This program has been set up so that the kind of training that are being planned and the activities which these teachers have to do and go through now are radically different from the kind of thing we've been having in the past. This is the kind of work that you have to bring to the teachers. We must give them two things: (1) ability to use the language and to use the language as close as we can of course, as a native speaker would and (2) to work with the various means of teaching, that is the methodology today is somewhat different than it has been in the past. Since we are doing two activities, in learning the language and in learning techniques, then this would be part of the program, so that the beginning classroom teacher who has already proven herself to be a good teacher but not to teach a foreign language, will have an opportunity to see these things in action, as a demonstration there of actual techniques to be applied to be effective. The only question of course would be how far this should be continued. I think this is a beginning.

YELVINGTON No further questions.

FARR Thank you, Dr. Presta. In respect to the translators that have been an assistance in getting your signal in Santa Cruz, Monterey, San Luis Obispo counties for example, would that be for what they call the UHF signal?

DAY Yes, the Federal Communications Commission have set aside the channels above Channel 70 for this specific purpose. When you apply for a channel it has to be in the range of 70-83. It is an ultr-high frequency channel.

FARR In other words, you can beam it from your channel which is VHF into a UHF. Is that correct?

DAY Yes, what happens is that on Loma Prieta peak, for example, you construct a transmitter station which automatically goes on the air and off the air as activated by the signal from Channel 9. It receives Channel 9, translates it to a channel above Channel 70 and re-broadcasts it. That's the main

translator, so that it re-broadcasts it beyond the area of Channel 9.

FARR Isn't that somewhat the system that you have in your interplay between Channel 6 and Channel 9?

DAY No, this is a quite different system of microwave where you are beaming in a very narrow channel between two points.

FARR What kind of reception can you get on a UHF in schools. Is it going to be satisfactory?

DAY Well, this carries me clear out of my depth, Senator. The UHF signal is less satisfactory than a VHF, generally speaking. Secondly these translators are authorized to operate at very low power, they cannot go above 100 watts, as contrasted with our principal transmitter which is 150,000 watts. That puts a second limitation upon the signal. Our transmitter on Mt. Diablo now operates roughly in a radius of fifteen miles, from Mt. Diablo in the direction in which it's beamed. A translator will do little more than fill in a small area; it cannot serve as a substitute for a broadcast station where you are covering a relatively large area.

FARR And the reception is not as good?

DAY The reception is as good, yes. It's just more difficult to get into a large area. The UHF signal is more affected by natural obstacles than a VHF signal, but where it can be picked up, where there is a clear path within the standard range of the station, this signal is equally as good as a VHF signal. There's no substantial difference in the quality of the signal at all.

FARR You mentioned the desire to get an ETV station in Los Angeles. They have just established one in New York now haven't they?

DAY Yes, they have.

FARR That's by public support, or how did that station get going?

DAY Well, the station in New York City was faced with a situation comparable to Los Angeles in that the seven available VHF frequencies were all on the air and operating at the time that FCC set aside educational reservations and therefore they set aside a UHF reservation in both cities. In New York a group of citizen formed themselves into a non-profit corporation, quietly raised $6 1/2 million and a broker, and then inquired to find out which of the seven channels might be available to be sold. It's a much longer, much more complicated story than that but those are the essential facts. When one channel, Channel 13 in New York, offered itself for sale this group came out in the open with its $6 1/2 million and in a great cliff-hanging story, ultimately ended up as the purchaser of the station. This is a non-profit community corporation headed by a group of distinguished educators and businessmen in New York City and it will operate as the other community stations that are largely from support from its audience and other similar resources.

FARR Did the FCC reserve a signal here for a educational television station?

DAY Yes there has been a channel reserved in Los Angeles since 1952. It is on the air under the auspices of the Allan Hancock Foundation at USC for a period of one year. I believe the channel is 28, I'm not certain of it. It has been, for reasons which we have mentioned before, impractical to oper-

ate that as a community station because there are so few people in the Los Angeles area who can pick up Channel 28 (if this is the channel number). The FCC has set aside eight channels in California, two of which are VHF and six of which are ultra-high frequency channels. Those channels have been added to recently because the College of San Mateo has had a channel set aside, Channel 14, for its purposes and San Bernardino has had a channel set aside for its purposes. There are now ten reserved channels in California which the two on the air are the two VHF channels.

FARR The other question I wanted to ask you - Did you mention you were getting fifty cents per student paid for the educational programs that are beamed out to the schools. Does that come from ADA funds?

DAY Yes, so far as I know. I'm not acquainted with the source of the money; I never ask questions as long as the money comes. In Sacramento it is fifty cents ADA and San Francisco area it is sixty cents per ADA. There are complications here; in the Sacramento area the district pays on the basis of its total enrollment, irrespective of the number of students who use the program. In the Bay Area the payment is on the basis of the number of students within the district who are affected by the program and does not represent the entire district enrollment, and hence the higher price.

YELVINGTON Is that fee per ADA, is that per ADA per course, or ADA for your total

DAY There's no way in which you can break down the program by course. Your costs of producing an instructional television service are largely production costs at the studio itself. The variable in the costs is given any number of using schools and is not great, so that it is for the total instructional service. They can use any portion of it that they wish but it is sixty cents for the total service.

YELVINGTON In other words for the same sixty cents they may receive your language and your science and any other of your courses.

DAY Yes. One reason for this is that we publish a teachers manual giving the essential information for all courses. While we have the utmost faith in the integrity of our school people, there is nothing to prevent them from paying for one course and using all of them.

FARR Thank you very much, Mr. Day. We appreciate you being here. I see the hour of twelve noon has arrived and perhaps we should take an adjournment until 1:15.

YELVINGTON Senator, Dr. James Enochs of the State College Trustee System has to be at a board meeting this afternoon, a trustee board meeting, and would like to get in before noon. If you could give him fifteen minutes I understand that would be all right.

FARR Where is Dr. Enochs?

YELVINGTON In the cafeteria.

FARR Would you come forward please?

YELVINGTON Can you make it in fifteen minutes, Dr. Enochs?

FARR After lunch I think we'd like to continue with this language problem because we're into that.

JAMES B. ENOCHS, DEAN OF ACADEMIC PLANNING, TRUSTEES OF THE CALIFORNIA STATE COLLEGES

Mr. Chairman and members of the committee, my name is James B. Enochs. I am the Dean of Academic Planning for the California State Colleges. I appreciate your taking this extra time this morning to hear me in relationship to the program of television in the state colleges since we have a Board of Trustees meeting beginning this afternoon, at which it seems I should be present also.

During the past eight years several of the California State Colleges have been involved in active exploration of various uses of television for educational purposes. Although mindful of the extensive experimentation being carried on across the nation in the uses of this new medium of instruction, neither the individual State Colleges nor their governing body found it feasible to conceive and to execute any coordinated plan for a systematic approach. Furthermore, some of the State Colleges up to the present time have had relatively little or no direct involvement in television activity.

The reasons for these varied approaches to television in the State Colleges are numerous and may defy generalization. Some of the reasons, however, can perhaps be summarized under these several headings: (1) fiscal policies, (2) institutional differences, (3) the status of educational television.

Fiscal Policies. As publicly supported agencies, the State Colleges are necessarily subject to the budgetary controls of the State Legislature and the Legislative Analyst, the State Department of Finance, the Office of the Governor, and the governing body of the Colleges (formerly the State Department of Education and now, since July 1, 1961, the Trustees of the California State Colleges). Because of the pressing financial needs of the Colleges, and of other State agencies, during a period of exploding populations, increasing demands for expansion of State services, and a nation-wide inflationary economy; and, furthermore, because of the size of the investments needed to inaugurate television activity of meaningful scope (complicated both by the problem of rapid technological change in the electronic art and by questions about the efficacy of the television medium for direct teaching), there has not existed, among these various bodies, a unified approach to the financing of educational television.

Consequently, some of the Colleges found that their original requests for funds for television came to be modified in various ways. Some were affected by budget cutbacks or deferments. Others were authorized to purchase equipment but were requested to use it to carry out operational plans which had originated elsewhere than in the Colleges. Still others were enjoined to engage in what, in retrospect, appear to have been premature cost studies. And, at various times, several of the Colleges became involved in controversies relating to the kind, quality, quantity and cost of specific items of television equipment sought. Thus, although differences in fiscal policy can be explained, they could not fail to have at least some impact on television operations.

Institutional Differences. Although the California State Colleges as a group share many of their educational objectives in common, they are also necessarily responsive to differences in regional and

community needs, to differences in curricular emphases, to differences in institutional age, history, tradition and custom, and to notable differences in size. For these and other reasons the individual Colleges initially approached educational television in different ways. One began with the preparation of community service (non-credit) programs broadcast over a nearby television station; another began with credit courses similarly broadcast over a television station in the area; another began with the organization of an occupational curriculum in broadcasting; another initiated a small-scale closed-circuit television system for demonstration uses; still others combined one or more of the foregoing approaches with attempts to use television for observation in the public schools as a service in the teacher education program. And certain of the Colleges are even now in the study and discussion stage, not yet clear about directions in which to move.

The Status of ETV. Nationwide and statewide activities in educational television during the past decade have also produced varying responses among the faculties of the several State Colleges. Close scrutiny has been given especially to the research which has been carried on during the decade, both in the general field of comparisons of television instruction to conventional instruction, and in the multitude of specifics pertaining to such topics as differences among academic disciplines, attitudes of instructors and students, retention of knowledge, course formats, live and recorded instruction, team teaching, testing procedures, class size, and an infinite number of other variables. Extensive as this experimentation and research has been, nevertheless the research findings on the efficacy of televised instruction have by no means achieved universal acceptance. Although on the one hand there is a reluctance or even refusal of foundations or government agencies to finance replicative experimentation, there is also in the academic world continuing and lively discussion of the validity of some of the research findings. For example, the often-quoted general statement that television teaching results in "no significant difference" in the outcomes of a course when measured against conventional teaching, still produces, among some groups or individuals, the response that this is a commentary on the instruments of evaluation and their limitations rather than an accurate statement about the effects of television teaching.

The issue is further complicated by the perhaps extravagant claims made at various times by some enthusiasts for television teaching and by the sometimes unreasoned opposition expressed by a hard core of permanent antagonists. Mention should be made, too, of the inevitable fears of technological displacement which have been voiced at various times by some members of the teaching profession, of the anticipated disruption of the time-honored, face-to-face personal interaction between teacher and students, and of a whole series of psychological implications - both real and fancied - having to do with status, peer group judgments, and personal feelings of security or insecurity. It is idle to wave these fears aside. Whether groundless or not, the fact that these fears are felt and voiced has had an effect on the willingness or the reluctance of some college faculty members directly to engage in or even to countenance television teaching on their campuses.

Despite the impact of the several divisive forces mentioned, television activity in the California State Colleges up to now has been both tangible and viable. Through the exercise of ingenuity, imaginativeness, and resourcefulness, a number of the Colleges have been able to accumulate a diversified list of experiences and achievements, several of which have in fact drawn national attention.

Beginnings of Television Activity. In 1953 San Jose State College began small-scale demonstrations of the use of television for observing psychiatric interviews at Agnews State Hospital. San Diego State College began with the development of a curriculum to prepare professional personnel for employment in the commercial television industry. Fresno State College, beginning in 1956, offered courses for extension credit through a local television station. Chico State College, from 1953 to the present, has averaged two and a half hours per week of free time on a local commercial television station for the production and broadcast of a wide variety of cultural and informational programs. At San Francisco State College, with the assistance of a grant from the Ford Foundation, there was carried on for three years an experimental research program in the use of open-circuit television (over a non-commercial community station, KQED) for teaching required general education courses.

The diversity of this initial activity and its subsequent expansion was especially valuable in situations where the possibilities of the new medium were being explored. The college staffs needed time and experience to learn more about how television might be used and to acquire first-hand information about the impact of an electronic medium on traditional college teaching procedures. At the same time, other colleges and universities throughout the nation were carrying on experimentation in similar and in other ways with a subsequent flood of literature describing various programs, uses, procedures, and results.

State College Committee on Instructional Television. In an effort to develop some guidelines which might encourage further explorations there was formed in 1956 a State College Committee on Instructional Television, composed of two representatives of each of the ten then existing State Colleges as well as representatives of the State Department of Education.

Under plans reviewed or developed in this committee, the program at San Jose was enlarged to provide for expansion of early experiments in observation of teaching in the public school; the professional program at San Diego was enlarged to include uses for instructional purposes; and the policy was developed that new classroom buildings on every campus should henceforth include conduit to accommodate any future installation of closed-circuit television systems. Proposals from Fresno, Humboldt, and San Fernando Valley State Colleges for the construction of television studios on their campuses were also supported.

The activities of the committee were intended to be in keeping with a basic principle that before more elaborate plans were developed, each State College should have a full opportunity to explore the uses of television on its own campus, to gain experience in how it might be most effectively used, and to give the faculty and staff full freedom to raise questions, step by step, and to seek

tentative answers.

Following up on these general policies, six of the State Colleges - Fresno, Los Angeles, Sacramento, San Diego, San Francisco, and San Jose - prepared budget requests in 1959-60 for further activity in educational television at their campuses. The requests encompassed both initial items of equipment at some of these Colleges and supplementary items at others in order to enable the Colleges to use television for the instructional purposes already accepted at the individual campuses.

In the accumulated experience of the past eight years television has demonstrated its utility for the State Colleges in a number of ways. Among the chief uses to which television has been put, on a regular operating basis, are the following: a variety of open-circuit courses for credit and non-credit students (either through free time provided by a broadcasting station or through purchased time - as, for example, time purchased from KCOP, Channel 13 in Los Angeles for broadcasting courses for Los Angeles State College); segments of closed-circuit courses for credit in such fields as English literature or composition, psychology, history, education, art, health and safety; closed-circuit observation in teacher education programs; demonstrations in science, engineering, health and other courses; public information programs; expansion of curricular offerings in broadcasting itself.

Budget requests for 1961-62 originating in the Colleges were intended to permit further expansion of activities so as to include studio installations at Chico and at Long Beach as well as to furnish additional equipment (e.g., leasing of video tape recorders) at some of the other Colleges. In only two of the Colleges, however, Los Angeles and San Diego, is teaching being done with the use of tape, since these are the only colleges having a video-tape recorder.

Results from the use of television are evaluated in the same way as regular instruction. In other words, instructors tend to use the same kind of tests and the same standards as they use in conventional teaching. Those who have used television see no great difference in student achievement as measured by these tests.

In general, students seem to be accepting instructional television with no great criticism. More and more it seems to be a part of the educational pattern, so that going to a room for television teaching is just as normal as going to a lecture or laboratory. Those instructors who have used television have for the most part had favorable reactions. Some, of course, have not liked it, and they have not been forced to continue. Others have been very enthusiastic, seeing in television possibilities not available to conventional classroom teaching. In general, it would seem safe to say that where television is being tried, its value is being recognized as evidenced by the increasing number of requests made to the television centers for instructional help. Such requests at several of the colleges have reached such a magnitude that it is not possible to fulfill all of them.

No adequate comparative cost data are available. Such studies require personnel and procedures which have not been provided in the budgets for the colleges. In a study conducted by the colleges

under a grant from the Ford Foundation, estimates of comparative cost were calculated using various methods of teaching and including amortization costs for television equipment. These cost estimates indicate that television teaching is no more expensive than conventional teaching if adequate numbers of students are involved, and that more economical teaching is possible by television when large numbers of students and video-taping are involved. It takes time and adequate budgetary support for equipment and personnel if this more economical level of operation is to be achieved.

The State Colleges have now completed a study outlining various uses of educational television. The report of this study will be circulated to all the faculties of the colleges this fall, and they will be requested to draw up their plans for educational television on each campus. These individual plans will be collected and reviewed in the Chancellor's Office and a coordinated plan will then be presented to the Board of Trustees and eventually to the Legislature. We would anticipate of course this coordinated plan will also fit in with the coordinated plan which is being developed under this program which Mr. Bell spoke about earlier this morning.

FARR We would appreciate it if you would make this plan available to the committee too.

ENOCHS I certainly will.

FARR Any questions, Senator Stiern?

STIERN I have no questions.

FARR Mr. Yelvington?

YELVINGTON No questions.

FARR Do you have some more copies?

ENOCHS I gave them copies.

FARR Thank you very much.

ENOCHS You're very welcome and thank you very much.

YELVINGTON Lunch will be available I understand in the faculty dining room of the State College cafeteria. Mr. Loper, do you have someone to lead us there? Thank you.

FARR Just before we go, I might say this. I hope you will all be back this afternoon. Tomorrow this committee has been invited to visit the Anaheim School System. We'd like to have any of you who care to go along with us, come. Mr. Yelvington, what time are we going to meet tomorrow?

YELVINGTON At ten o'clock in the Administration Building. The address is on the agenda.

(Adjournment for Lunch)

RICHARD CLOWES, CHIEF OF VISUAL INSTRUCTION, CALIFORNIA STATE DEPARTMENT OF EDUCATION

Mr. Chairman, I think it would serve as desirable background if we could call on Mr. Helmke who is a consultant in Audio-Visual Education, to bring us up to date on the current status of educational television, at least based on the figures that are available to us. This map will help Mr. Helmke in doing this task so I'd like to call on him to explain the colors in the map.

FARR Fine. Do you people want to move up to see this map?

GUY M. HELMKE, SPECIAL CONSULTANT, NDEA, BUREAU OF AUDIO-VISUAL AND SCHOOL LIBRARY EDUCATION, STATE DEPARTMENT OF EDUCATION

Senator Farr, this is a bringing-up-to-date of a map which was displayed at one of these hearings about two years ago by Dr. George Ormesby. In general, the status of television can be looked at with reference to three different types of television. We have here listed instructional television, and Dr. Clowes will go into this matter and I think we are all rather familiar with the differences between instructional television and the more general pattern of educational television, which you have heard so ably discussed this morning. I have here on this map listed as near as we could the status of instructional television. The red dots as you see are closed-circuit installations, which vary in scope from the large installation which you will see at Anaheim tomorrow, to very small installations which might be included in just a single laboratory or classroom in which the instrument is used just to magnify a demonstration for the students. These are spotted around throughout the state; here is one at Humboldt State College; there are several in the Sacramento area; there are a number in the San Francisco area, and you can see them spotted all over. These are the ones which are currently in effect at the present time. Their are eighteen of them, more or less, in colleges and universities. There are eight of them in junior colleges; there are five in high schools and there are five in elementary schools.

We look forward in the near future to having about nine more in junior colleges, five more in high schools and five more in elementary schools, and these will vary in scope. We have the Anaheim closed-circuit television chain which is a multi-studio, multi-camera, multi-teacher installation. We have at Cupertino High School thirty-two classrooms or instructional areas connected up by cable and served by a three-camera chain which can give simultaneously two laboratory or classroom demonstrations, motion picture film or slides and also pull in Channel 9 from the air broadcast television with its programs. Very well. This is closed-circuit.

Then let us go to the educational television stations used for instructional television. I'm not going to go into Channel 9 because you have heard a rather thorough and good explanation of that from Mr. Day this morning. Neither Mr. Hyden nor Mr. Crabbe from the Sacramento area are here today or we would have a similar explanation. I have here, and I think most of you can probably read, some figures These are by and large pretty close to what Mr. Day gave. This is very much according to the report of Mr. Hyden and this, with some alterations, may well be close enough to the Los Angeles area which uses bought time from a commercial station, as we all know, and which you heard described rather well for Los Angeles by Dr. Chaffee. Very well.

Then their are other areas throughout the state which, in some measure, are using public service time usually for broadcasting instructional television. This is a night program out of a night school in San Diego; this is from courses from Fresno State College; this is from Chico State, which you heard discussed; and here is a small program on public service time out of a station in Redding, which

is organized through the Shasta County Superintendent of Schools Office.

These areas which I have displayed here are not accurate. If they were given in every intricacy of the shadow areas where programs cannot be seen they would be very intricate in pattern. I'm going to check with Bob Gerletti afterward and see what he knows about the reaching qualities of the programs in this area because it is highly general.

You will notice in here that there is an area which is made possible by a translator which Mr. Day spoke about, beaming down from Mt. Diablo.

Now, over on this map you will see what we anticipate, and there is much on this map which is not placed here in the anticipation, because some of it is too vague. Some of the things which we had hoped to put on the map were clashes of interest and then they vanished, but let us look at a couple of them in the broad sense. Here are translators, or cable, or micro-wave and cable, or micro-wave and translator down the coast which James Day described to you. The possibility of a translator upped to Ukiah, Willits, Fort Bragg and an augmentation of the station there. Here is San Bernardino, Channel 24 which has been allocated to them and this is an ultra-high frequency situation. Of course these two are very high frequency as Mr. Day explained to you. We also have word that the San Bernardino station will be augmented in due course of time and quite a bit of planning with reference to pushing their signal out with micro-wave and translators to the Palm Springs area, Coachella Valley, and the Blythe area. There was, some time back, some thought of getting KCOP in the Imperial Valley. Kern County has thought that they might be able to put something on the air from a commercial station there. In Kings County they, the County Superintendent of Schools Office, has the plan of purchasing kinescopes of Channel 9's programs and re-broadcasting them through a local station. Next to it is Tulare County which would like to get these kinescopes, the same kinescopes, and distribute them throughout the county schools by means of the audio-visual sixteen millemeter projectors which, you must admit is really a television program in itself.

I have just pointed out the State Colleges, some of which are getting with television at the present time, the possibility of a connection by micro-wave or cable of the University of California campuses. This is all projected; we don't know for sure which way this is going to go, but these are possibilities and we thought it well that we should look at this. Yes, sir.

FARR On a network show - say something starts at this commercial station, the program comes out of Los Angeles and we see it in the Bay Area, does that go by micro-wave, does it go by telephone cable or just how do they work it?

HELMKE You mean in commercial stations?

FARR Yes.

HELMKE I have been rather close to the people in Sacramento, the Telephone Company, and I have myself seen micro-waved eastern television programs coming through Sacramento to be shot by the Telephone Company's translators to Southern California to be video-taped there.

FARR Then most of the network shows that come across the country that go from San Francisco to Los Angeles or vice versa would go through micro-wave on the telephone system. Is that correct?

HELMKE That I believe to be the case. I know that much of this is being done. Possibly Mr. Day can tell you a little bit more about this. This is probably right isn't it?

We look forward to the larger studios, one of which may very well be on this campus itself. I didn't have a chance to see it this noon, but I understand that they will have video-tape equipment and cameras of a nature which will allow programs to be made here, taped, and then used at will at the appropriate time to beam to classrooms. This is one of the things we look forward to when there are more stations.

I call to your attention - I'm going to flop this thing over now - I have prepared a transparency which is the same as that, and this gives you a picture of what we have now and what we propose. You can see the extent of some dreaming and planning for Channel 9; I believe that there are some extensions here. Here is another station which I believe Mr. Weems will tell us about, which probably will be coming into effect in about a year and a half, and that being in the same area as Channel 9, will double the transmission time available. We may possibly have more of these wherever the KCOP channels transmissions and the new 24 channels will multiply, you will have the same. So we have here laid down before you what we do have and what we do not have.

As an example of what is being done in the border areas, finally, I want to tell you about one little item that is right up in here. Two years ago a local man wanted to have color TV in the little town of Fort Jones. He went and got a man in and they went all over a little knoll out in the flat of the valley and stuck up about three different aerials, and they can get about three different stations. Then he ran a cable to his house, about 350 yards away. Other people saw this and rather soon, on a cost more or less basis, cooperative effort, the whole town of Fort Jones, a village, was all coupled in and here they had this rather good television reception. Some of it came from Oregon, some of it seeped in around various areas from this station. The nearby town of Etna said, "We want this too," so they did likewise too. Sometime back this man said, "As soon as we get good programs available to us, good instructional programs, I will see that the schools are tied up with this circuit free." What we can do to all of our areas remains to be seen.

FARR Thank you very much, Mr. Helmke. I wonder if you could make possible some time before our final report goes to print, a copy of that map - it would probably have to be in black and white - that we could use in the report. Could you make that available to Mr. Yelvington, our secretary?

HELMKE Yes, sir. I will do so.

FARR Any questions, Senator Stiern? Yelvington?

YELVINGTON No questions.

FARR Thank you very much. Would you continue, Mr. Clowes?

CLOWES Mr. Chairman, Senator Stiern. So much of what I had planned to say has already been very ably said by people who preceded me that I don't think you need to be subjected to repetition. I am impressed by the degree of unanimity of feeling that appears to be present here today as the different people testify. There seems to be common accord in connection with certain questions.

I would want to make clear the position of the Department of Education relative to its attitude about the merits of instructional television. Our position is essentially that that is exemplified by Dr. Schramm's statements, Dr. Schramm, you remember, was quoted I believe by Mr. Day this morning and he pointed out that on the basis of widespread experimentation, carefully controlled experimentation, there is absolutely no doubt that instructional television is effective, and that we therefore accept this as a basic assumption in all of our discussions. We think instructional television is and can be effective and ought to be exploited as rapidly and effectively as possible.

Do you have copies of this material?

FARR Yes we do, and rather than read your full

CLOWES I won't read it, no. I'd say we skip the first page and the second page has all been pretty well covered by people who preceded me, as has page three, discussions of KQED and KVIE, down to the bottom of page four. I would like to comment about television's role in connection with meeting the 1965 deadline with foreign language instruction. You'll find some material here.

You have asked a question in the announcement for this hearing and the question is this: "Can instructional television reasonably be expected to enable school districts to meet the 1965 deadline for foreign language teaching beginning with grade six?" Presumably this is one of the questions you are seeking to answer in these hearings. You know what the requirement is of course. I should point out a couple of things; (1) that vast areas of the State of California still do not have available to them instructional television in any quantity and that the topography of this State probably is going to pose some problems in making instructional television available at least on a broadcast basis, and cost of course will make it difficult in terms of closed-circuit television. (2) The other point that I should make is that we're talking about more than twelve hundred separate elementary school districts in California, each of which is going to have to plan a foreign language program, and we're talking about 143 unified school districts. These foreign language programs are going to affect in addition every high school district in the State, because high schools will be receiving as freshmen, children who have had varying types and qualities of foreign language instruction in the elementary grades. So it is a large problem and one that has to be attacked boldly in order to find an adequate solution.

Skipping over to page five, the second paragraph, I said this: The answer to the question posed in your announcement ("Will instructional television enable districts to meet the deadline"), the answer to this question might very well be "No. Instructional television will not, by itself, enable California's schools to meet the 1965 deadline for foreign language instruction in the elementary

schools; but it can give significant help, and should be developed as an aid in this program." We hoped that we could extend all of our resources to contribute to this development. We point out that televised instruction under good conditions is effective now and it can be made more effective, and we have listed three or four conditions that need to be met - this is on page five - if televised instruction is to contribute significantly to the foreign language program. I think that these conditions are self-evident; I need not repeat them. You will perhaps read them at your leisure.

I think that I should stop with that. There's some other material here that you'll have an opportunity to glance at if you wish. This forms the substance of my statement.

FARR Yelvington?

YELVINGTON Dr. Clowes, if television in itself will not be the complete answer, is it probable that many of the foreign language instruction programs developed for television, that those materials could be used through other media such as film projectors and

CLOWES Yes. I am not technically well informed in the field of television but I understand that kinescopes developed out of television programs can be run on sixteen millemeter projectors, and these could be made available for other types of use. The studio facilities of broadcast television stations can be put to use to develop this material.

YELVINGTON So that the solution as to whether television is the answer or not it will have to pull out of what develops for television to a large degree.

CLOWES To a large degree, yes. I hope I've made myself clear. We think television is an important medium in connection with this program; we do not think that in and of itself it's going to permit districts to meet the 1965 deadline, probably more than this is needed. I should point out also that in 1961 the Department of Education made a survey of elementary school districts that were offering foreign language instruction and that among the 600 districts that were either offering foreign language instruction or planning to offer it, 40% of them utilized television as a basic part of their program. This would mean that 240 out of the 600 were using television. I think this is testimony to the effectiveness of the medium.

FARR Thank you very much. Would you identify yourself for the record please, Mr. Cheyney?

B. R. CHEYNEY, STATE PURCHASING OFFICER, CALIFORNIA STATE DEPARTMENT OF FINANCE

My name is B. R. Cheyney, State Purchasing Agent

FARR Do you have a written statement for the committee?

CHEYNEY I do.

The State Purchasing Agent was asked to report briefly on services of the Department of Finance, Purchasing Division available to school districts related to the purchase of instructional television equipment.

Under authority of Government Code Section 13409, the Department of Finance, Purchasing Division, may purchase such instructional television equipment as may be required for eligible local jurisdiction,

such as school districts. The Purchasing Division services which can be provided include all necessary phases of the purchasing process from development of technical specifications through bidding, bid analyses, and post delivery inspection. The Purchasing Division utilizes highly qualified specialists from the commercial television field to augment State personnel in specifications development and inspections.

Applicable policies and procedures related to puchase under Government Code Section 13409 are outlined in Appendix A, which you gentlemen have.

The principal advantages accruing to school districts in using Department of Finance, Purchasing Division, services in relation to purchase instructional television equipment may be:

1. Normally lower unit prices through consolidation of purchases.
2. The availability of fully qualified, disinterested, communications specialists for technical consultation.
3. Insulation of teaching staffs from bothersome and non-productive "hard sell" pressure from equipment manufacturers.
4. On request, arbitration by a disinterested third party in the person of the Purchasing Division of technical and qualified issues arising between members of the district's own staff.
5. Purchasing Division experience on past purchases of similar equipment (i.e., purchase of $234,000.00 of instructional television equipment for State Colleges in 1960).

I was asked to comment on recent developments in instructional television equipment. One of the new developments in the field of instructional television is a video tape recorder, being shown currently by the manufacturer in San Francisco. This is a slant line video tape recorder selling for approximately $10,000. Currently, tape recorders of this type have been selling for approximately $27,000.

FARR Excuse me, did you say tape recorder? You're talking about a video tape?

CHEYNEY Yes, sir.

Another new development shortly to be marketed is a 1 1/2 inch face plate vidicon television camera which will be available from Sarkes Tarzian. Until recently the face plate of the vidicon tube used in all cameras owned by the State was slightly less than one inch. This new vidicon with 1 1/2" face plate should result in significantly clearer picture rendition and apparently will be priced attractively.

The entire field of instructional television equipment is quite new and new products and significant improvements in established products are being made constantly. Entry of new manufacturers into the field has increased competition for instructional television equipment purchases.

The State's experience with recent purchases of this type of equipment indicate that consolidation of the requirements of several instructional television equipment installations can produce substantial savings to the jurisdictions.

FARR Thank you. Any questions?

YELVINGTON This statute has been on the books for two years, is that right?

CHEYNEY Section 13409? No, sir it was enacted last session.

YELVINGTON Well, that's current. One year. Have you had many school districts come to you for assistance?

CHEYNEY We have had none.

YELVINGTON You have had none.

FARR Are they aware of this? Have you notified them of the services of the State Department of Finance?

CHEYNEY Yes, they have been notified through their organizations.

FARR In other words, you now offer them central buying in the purchase of television equipment. I suppose to buy for a number of schools together would be a little cheaper rate, is that correct?

CHEYNEY Yes, sir.

FARR And also you're in a position to offer technical services?

CHEYNEY Yes, sir.

FARR Well, I can say in my own county that two years ago we were looking into the matter of translators and what-not, and we had a private person come in and I think it cost the county a little bit of money and now, if this were available, they could have gone to the State of California and gotten the information. Apparently the information they got was not too satisfactory. I'm glad to know that you are in service.

YELVINGTON One significant thing here is that if this service is available, not only will the State Division of Purchasing be able to save these school districts sums of money because of consolidating purchases, but they will also be able to give them technical advice and every district which goes into instructional television has to gain its own knowledge and its own experience through trial and error, the Division of Purchasing has already done that, and that in itself is a savings of taxpayers' money. I'm surprised that more school districts haven't used this service.

FARR Well, I am too. What do you attribute that to?

CHEYNEY I can't answer that, Senator, I really don't know. The information was made available as soon as the legislation was passed to all the political jurisdictions and the school districts. We have had response from the various counties and cities and a number of them have taken advantage of this. But the educational people have not responded, or rather they have responded but their interest apparently has not been sufficient to explore the matter any further.

YELVINGTON Senator, this was your bill, as you will recall, and one interesting result of it is that the Division of Purchases cannot, as the law is interpreted if I'm correct, Mr. Cheyney, that you may purchase for any political subdivision of the State, any article they need. Is this correct?

CHEYNEY Yes, sir.

YELVINGTON And up to date you have bought some motorcycles.

CHEYNEY We bought those for the city of Oxnard, and we made substantial purchases of furniture for the county of Mendocino when a fire destroyed a portion of their courthouse. We have had inquiries from Los Angeles County and, as a matter of fact, our process at the moment is consummating a purchase of blankets for them, as they have found that we can buy them at a lower figure than they can, and Los Angeles County is a substantial purchaser.

YELVINGTON But this was put in for the purpose of enabling the school districts to get television and they haven't used it, but other political subdivisions are beginning to take heed more rapidly than the school districts.

CHEYNEY Well, I would express it this way: that they have expressed a great deal more interest than the school districts appear to have up to this point.

FARR You might circulate the school boards, you have probably tried it through the school administrators, but you might try through the school boards.

CHEYNEY Well, we will do that, Senator.

FARR I'd like to ask you one other question. We had a resolution enacted by the last session of the Legislature asking the State Department of Education, the State Department of Finance and the State Allocation Board, to call to attention of all the school districts in California in constructing new schools, the advisability of putting in the wiring and tubing for television. Do you know whether or not this has been done.

CHEYNEY I can't answer that.

FARR Can anybody else? The question is that the Legislature for the last session passed a resolution calling upon the State Department of Education, Finance and Allocation Boards, to call the attention of all local school districts the advisability of putting in the tubing and wiring in building a new school for television purposes with the thought in mind that it be done in the schools being constructed, because it is a lot cheaper than if they come in at a later date. We wondered if, by any chance, this has been done. It has been called to the attention of the local school boards.

HELMKE I have seen the copies of this legislation, know that this has been brought to the attention of the Bureau of School Planning whose Chief is Mr. Charles Gibson, and that's the limit of my knowledge relative to this at this time.

FARR Due to this, Mr. Helmke, I think it would be of help to the committee if you could follow this up and could inform Mr. Yelvington as to whether or not the schools have been notified and to what extent they are following up on this resolution of the Legislature.

HELMKE Yes, sir, I shall.

FARR Thank you very much.

CHEYNEY I might make one comment, Senator, to illustrate the savings which can be effected for production and cost. On the last purchase which we consummated for Chico State and Long Beach State Colleges the amount budgeted was $114,000. The purchase of these two units was effected for $95,000, which

would give you some idea as to the benefits of consolidation where this is possible. You can effectively reduce the cost of the equipment.

FARR I'm sure that this is one of the matters that the television coordinator will get into and also Mr. Day's committee.

STIERN Mr. Cheyney, is this unique, that California through its Purchasing Division offers to buy this equipment for schools, or is this offered in other states.

CHEYNEY I understand that it is done in other states, sir.

STIERN Then, is there any merit in trying to have three states buy together. I know at first this is going to sound odd to you but in testimony in another committee I understand that this is being done in Idaho, Montana and Dakota, that they work their lady prisoners through one person in Montana and they pay their bill, so they do have tri-State cooperation. If something was done like this in Arizona, Nevada and California, would there be any merit in exploring that?

CHEYNEY I believe there would, sir, but I also feel that would require some enabling legislation on the part of our state to make this permissive. I don't think that presently the statutes provide for this.

STIERN I see.

FARR That's something that perhaps the Advisory Committe might look into. Thank you very much, Mr. Cheyney. Do you have a copy of your statement for the record, Mr. Cheyney? Dr. Merrill of the University of California Medical School? Mr. Cheyney, where is your statement? We don't seem to find it here at the desk. Fine, thank you sir.

YELVINGTON Senator, I might, on your behalf, announce that we are taking this out of order in deference to the plane schedules and you need not worry that the testimony will come or reach its final form in such a disjointed relationship. When the tape is typed, transcribed, we will put everybody's testimony back into a logical sequence and for our practical working purposes the order in which it is taken will only be an inconvenience here to logical understanding but it will all come out right in the end, I hope.

FARR Excuse me. Just before I call you I see Roy Bell is here. Do you have any suggestions for how this matter of central purchasing could be followed up. It would seem to be a great saving to the taxpayers in the local school districts that are interested in television and they do not seem to be using it at present. Would you like to make a comment on that, Mr. Bell?

BELL I didn't catch Mr. Cheyney's talk but the few words I have had with him on the subject, he has talked with the various organizations, at least one of which represents the public school purchasing people, and they after the meeting more or less indicated to him that there were various reasons why they felt that it would not be as good to them to use central purchasing for TV equipment as perhaps places like cities. I'm not quite sure whether we have here some problem of resistance or whether it is a true problem of feeling that it would cost just as much anyway if they did it themselves. And the

fact that they are afraid if they have to go to a centralized source there would be the normal delays which that type of thing normally comes up with. I think that they are needlessly worried or concerned about cost. I doubt seriously if they're going to do better than the State does, because the State usually buys at quantity discounts and other negotiations with vendors, comes out in most cases pretty far ahead. The only cost we would add to that would be a very modest service cost, $20-40, something like that, on a complete order. I don't believe that cost is really an argument. As far as loss of time goes this I just don't know the answer to. I do know we have made an attempt through contacting these type of people. They themselves were the ones who were resistant to it. This is a matter where you place your control and autonomy in the Board and you really can't walk in then and cram something down their throat if they don't want it.

YELVINGTON Senator, does that about take care of the Legislative resolution urging this?

FARR Thanks very much. Dr. Merrill?

DR. IRVING R. MERRILL, RESEARCH EDUCATION, DIRECTOR OF TV RESEARCH, UNIVERSITY OF CALIFORNIA MEDICAL CENTER, SAN FRANCISCO

Senator Farr, Senator Stiern, Mr. Yelvington, my name is Irving R. Merrill. I am research educator and Director of Television Research at the University of California Medical Center in San Francisco. I might say that my testimony is, as I understand, on a request for a representative of a particular campus of the University and I believe I was asked because of the unusual nature of our work in medical television. Mr. Paltridge who would have normally spoken before me will give the general picture for the entire University of California.

The Office of Television Research at the San Francisco Medical Center has two responsibilities. One is for the on-going instructional television operations of the Medical Center, which includes the professional schools of Medicine, Dentistry, Pharmacy, and Nursing, and the Division of Graduate Studies. For this phase of activity, the Office is responsible to our Chief Campus Administrative Officer. The questions of the Committee appear to bear most directly upon this phase of our operations.

The other responsibility is for the conduct of television research. The University of California Medical Center has received a grant from the U. S. Office of Education under the provisions of Title VII of the National Defense Education Act. The grant designates Dr. Theodore S. Grant of our dental faculty, as Principal Investigator, and under his direction our office executes television research according to the terms of this research agreement. Time permits only brief mention of the findings of the five separate studies mentioned.

Our faculty advice and counsel is obtained through the Medical Center Committee on Medical Illustration, Photography, and Visual Aids, of which I am an ex-officio member.

My testimony today will consist of response to the following questions:

Question 1. What courses are taught via television?

Instructional television has been in operation on the San Francisco campus for four semesters.

During that time 15 courses have been offered which included television presentations on a regularly scheduled basis. These courses all carry regular academic credit. Our Medical Center faculty has chosen to use television selectively to teach material which may not be taught as well, or at all, in any other manner. For these presentations, television is not an enrichment device, or an image magnifier, but is the primary means of instruction.

In these terms, regularly scheduled presentations may take place once a month, or more often than once a week. Because our faculty gives careful thought to advance planning of their instruction, we have found that dates for presentations are normally scheduled before the semester begins. The advantages in economy of this system are that the equipment is only used when it is really needed, and more schools and departments on our campus are able to make use of the equipment.

You may be interested in the breakdown of school and departmental use of television. Medicine and Dentistry have so far made the greatest use of our television equipment, in roughly equal amounts. Advance reservations for the Fall, 1962 term indicate that use by Pharmacy and Nursing is to be substantially increased. Those areas in Medicine in which television has been used for instruction include: Anatomy, Anesthesiology, Cardiovascular Research, Continuing Education, Microbiology, Obstetrics and Gynecology, Ophthalmology, Otorhinolaryngology, Pathology, Pharmacology, Physiology, Proctology, and Surgery. In the School of Dentistry these areas where television has already been used to teach during these four semesters include: Crown and Bridge Prosthesis, Dental Hygiene, Endodontics, Morphology, Operative Dentistry, Oral Biology, Oral Surgery, Orthodontics, Pedodontics, Periodontology, Postgraduate Education, and Prosthodontics. In the School of Pharmacy there are other areas and also in the School of Nursing. This represents in our opinion, a wide application of television in the health science professions.

Some notion of the extent of this instructional program may be obtained from the following data: During the first year of operation, September 24, 1960 to June 30, 1961, there were 81 closed-circuit television presentations, accounting for 180 1/2 hours of television teaching, and a total of 51,843 student-hours of televised instruction. For the current fiscal year, July 1, 1961 to June 30, 1962, we have had a 60% increase in the number of presentations.

Question 2. Is televised instruction presented live or by videotape recording?

We had no videotape recorder during the first three semesters of operation. The videotape recorder was available to us at the beginning of the spring semester this year. It was secured primarily for instructional purposes but it is also being used for clinical research purposes. At the present time one machine can handle all recording requirements at the Medical Center.

Currently about 75% of all our presentations are live. This makes it possible for the professor to quiz the student and vice versa. He is able to repeat portions of a demonstration if he wishes and can direct the cameraman accordingly. This element of immediacy is to our mind one of the important attributes of television, one of the pressing reasons which we had for acquiring this equipment

in the first place. Under such conditions television is a medium through which teaching and learning take place. In contrast, the motion picture print can only be started and stopped and repeated; it cannot be made more effective once it reaches the classroom.

However, we are now using our videotape recorder for important events which can be repeated only with extreme difficulty or not at all. For example, the entire eight members of the Admissions Committee of our School of Nursing have in the past attended one session of a course for graduate nurses each semester. As the demands upon the Admissions Committee's time increased, the members asked to have their conference recorded on videotape. This took less of their time than conventional motion picture production time would have taken, and when the admissions procedures are changed, and they change fairly regularly, the tape will be erased, and the revised discussion put on that same reel. In the School of Medicine a particularly difficult experiment in microbiology is scheduled for recording in July for integration as a brief unit of instruction this fall. Another example concerns the department of Physiology. A well-known professor on our campus is customarily invited to give a lecture-demonstration before the first-year medical students. Since he will be on sabatical next year, he has consented to record his lecture-demonstration before he departs for Europe.

Our machine is also used to record, as Senator Farr has already observed, many of the sessions in Continuing Education for health science practitioners. These meetings feature world-renowned physicians and scientists as panel members and speakers. In ten instances this year, recordings have been the means whereby sessions of unusual public interest could be passed on to the public by means of broadcast television.

In summary, we have found that in the health sciences "live" television presentations are particularly effective, but we have also found that there are many special cases where a recorded presentation is required. I think this is directly to the point of some of your questions.

Question 3. What evaluation has been made of the merits of instructional television?

The closed-circuit television system was established on the San Francisco campus with two purposes in mind: to improve instruction, and to achieve economies. Naturally the funds from the research grant have been devoted to measurement of how well these goals have been achieved.

There is no question but what instruction has been improved in the health sciences by television. Some advantages are so obvious that formal research is unnecessary. In examination of other problems of improvement of instruction we feel that experimental studies of learning by television are the only means of developing reliable information. Much of the types of studies which have been referred to previously by the nature of the differences in instruction cannot be considered to apply as well; hence we feel there is a real need for television research in the area of the health sciences.

While doing background reading for our studies on how television may achieve economy in instruction, I was impressed anew at the complexity of the problem. Fortunately, the University has participated in one of the most rigorous attempts to grapple with this problem and the results, as you

know, are contained in the California and Western Conference Cost and Statistical Study. This deals with overall University costs.

On what basis does one decide a new technological device provides an economy in instruction? What basis for justification should be adopted? Measurements of improvement in instruction generally mean comparison of learning by alternative techniques with the amount of time taken to teach it held constant in comparison. I would suggest that measurement of economy involves comparison of alternative techniques in terms of time or money with the amount of learning that takes place held constant.

We have documented that television can save instructional time for both students and faculty. With the assistance of a specially videotaped demonstration on preparation of a full crown, freshmen dental students were able to complete a test case in the average time of 49 minutes. Using a technique related to conventional instruction, a matched group of students required an average of 79 minutes to complete the same preparation. There was no difference between the groups in the average quality of the work performed. Here I think is an instance of savings that can be directly attributed to television.

As the research proceeds, we hope to learn more about what can be expected of television in terms of savings in health sciences instruction. We think the prognosis is encouraging.

Question 4. What is the reaction of faculty and students to instructional television?

I think that the best evidence of faculty acceptance has already been given in the list of areas in the Medical Center now using television as a technique of instruction. We have found a ready acceptance, since the faculty was already accustomed to a visual means of instruction. It was, of course this need to teach visually which in the first place generated the strong faculty demand for television.

Advanced students in the health sciences have given television the most enthusiastic response I have observed among college students anywhere. There is nothing surprising about this, because health sciences instruction is highly visual in nature. These students are not impressed with the novelty of television; what they appreciate is the fact that it helps them see better.

Question 5. What are the plans for our immediate future?

The San Francisco campus has prepared a five-year plan for television development. An important problem we face is where to house the television facility. At present, with the exception of the video tape recorder, all of the equipment is on wheels and must be pushed from one origination site to another. This process is time-consuming, hard on the equipment, and limits our production capacity. The number of presentations could be doubled if there were a central facility where the faculty could come to originate instruction, doubled at no extra television cost, you see, for equipment, personnel and staff.

This is not to say that there will no longer be a need for this mobile equipment, because some research equipment used for teaching cannot be moved and we have to take the cameras to where it is.

It will always be necessary to move the television equipment to such sites. The five-year plan has been developed to fill demands of faculty in the Medical Center who are not now adequately served by the present equipment that we have.

I think this is all the time I had better take.

FARR Thank you Dr. Merrill. Any questions Senator Stiern?

STIERN I'd like to ask one. I don't know whether you do or not, you probably don't now but perhaps a bit in the future, could these video-tapes of the San Francisco Center be used on the UCLA campus at their Medical School there? Is there some way in which you could develop an exchange and even extend this further?

MERRILL There has been some talk of this and there is technically no reason why it could not happen. I know a number of our faculty have expressed interest in receiving tapes like this from the UCLA Medical Center in the future.

STIERN Also, I suppose it's conceivable that Stanford Medical School could do this and you could work back and forth with unusual cases and things like this.

MERRILL There has been an example of cooperation of one of our Continuing Education courses, where the course was actually televised by our microwave by short circuit to the Stanford campus, and other times parts of our instruction program in health sciences have been televised to Berkeley and have been received and viewed over there, by means of their closed-circuit system, so that there have been some fairly good steps in health sciences taken in just the direction we have mentioned.

STIERN In light of the fact that there will probably be a school in San Diego, then this could really be extended, couldn't it? I mean these tapes could get extensive use by moving them between the schools.

MERRILL I would see no reason why our facilities might not be of considerable help to them, particularly in their early stages of development.

FARR Does the medical profession in San Francisco or in the Bay Area participate or come in to see these programs, or have any way of keeping up with them? I'm thinking of Continuing Education particularly in this field.

MERRILL Yes, sir. Our closed-circuit system is not only used by undergratuate and graduate medical students, but about 70% of our total number of presentations have been at the postgraduate level for practitioners. I indicated this only in passing. This means that they will come to our campus for a two- or three-day short course. For example, this fall Obstetrics and Gynecology will be using television to teach the people who are coming back in for this annual review. We think it's a very helpful means of keeping our physicians abreast of recent developments.

FARR Do you see any possibility as time goes on of getting these networks at UCLA maybe having a very interesting problem there that could be televised to the Medical School in San Francisco and possibly San Diego at the same time?

MERRILL I think that in general the Medical Faculties are quite interested in developments wherever they

occur. There has been some reference of hesitance of one faculty on some campuses to accept information obtained elsewhere. It is my personal opinion that we would not have much trouble in regard to our three medical schools.

FARR May I ask you another question. In some of these fields of health sciences, I think of Dentistry and some surgical operations, by televising the operation, is the student able to see things that otherwise he would not be able to see because of the confined area in which the doctor is working?

MERRILL This is very true. Once we started this and our faculty had an opportunity to see this, this was one of those areas where research wasn't even necessary. It was so clear that students for the first time were seeing what the instructor wanted them to.

FARR Just to try and visualize the situation - would you have, for example in a dental school or in a school of medicine, the surgical operation taking place where the students perhaps were in the amphitheater around there and the camera was down, the students could perhaps try to see if they could see on the operating table, but also would see something up on the screen in line so they could see. Is that the way it works, from a practical standpoint?

MERRILL Our usual medical and dental classes number about 100 students, and we have no medical or surgical amphitheater that will permit them to all gather at one time, on the San Francisco campus. So that generally, with smaller courses to postgraduate practitioners we do this system exactly as you describe it; but generally it means originating the presentation in one area and having students in some other area to view it. Now this is customarily done so that they also rotate through on a tutorial basis at another time and observe this face to face with the doctor and the patient together. A good example that we did just recently was where our students in the School of Pharmacy said, "We would like to see several of these anasthetics which we've been studying about, administered." They couldn't all go into the operating room to see this administered. Our amphitheater would only admit about twenty-four at a time, so we established three separate administrations of different anasthetics of a morning, and during a short period of time, students got to see each one of these administered and were able to observe the reaction of the patient as they received the anasthetic. The instructor of this course reported that this stimulated a great deal of interest, which lasted all through the semester and he felt that his teaching job was made much easier as a result.

FARR One further question. Is there much difference in teaching in the use of color over black-and-white?

MERRILL We have found that, due to the type of television equipment that we have at the Medical Center, we are able to use black-and-white television more extensively than a number of our faculty expected would be possible. We have also done and had some demonstrations of color television and it is becoming apparent that a number of our departments, particularly in the areas of Pathology, would be better served by color television. In many of these areas the color of the tissue indicates the nature and extent of the particular disease, and without the medium which would present this in color, it's very

difficult, of course, to teach it.

YELVINGTON I was informed by one of the staff surgeons at Stanford that television has just about put the amphitheater back into history, and possibly this would mean that new medical schools and new medical facilities, school facilities, will not require the construction of amphitheaters.

MERRILL This is one area that we are giving considerable attention to. I would hope that from our experience at San Francisco, given a few more years time, we should be able to offer some suggestions which might be worthwhile to use for example in San Diego. I'm quite sure that many of the uses for which the amphitheater was put, to which it was put in the past, can be much better served by television. Whether an amphitheater is not needed at all anymore, that's another question. But I think that there should be some reaction in terms of architectural design of new medical schools, based upon what television can do.

FARR Any further questions? Thank you very much, Dr. Merrill.

MERRILL Thank you. It was a pleasure.

FARR Mr. Paltridge? Mr. Paltridge is the state-wide coordinator of educational television for the University of California. I see you have a prepared statement there and, in view of the time and the number of witnesses we have, I wonder if you could more or less summarize what you have and file the statement for the record?

JAMES G. PALTRIDGE, STATEWIDE COORDINATOR OF ETV, UNIVERSITY OF CALIFORNIA AS A WHOLE.

I have anticipated you on that and marked this up so that I can paraphrase it and I will leave copies with you.

YELVINGTON If succeeding witnesses could be preparing to do that, it certainly would...

FARR It would help us very much. If you do have prepared statements pick out the highlights and then form the more formal statement with us. Thank you.

PALTRIDGE I guess I've been identified on the record. I'm James G. Paltridge, Statewide Coordinator

FARR Would you speak a little louder? I think some of the people in the back may have difficulty

PALTRIDGE Statewide Coordinator of Educational Television, University of California. I will explain very briefly that my office is attached to the staff of President Clark Kerr, reporting to Harry Wellman, the Vice President of the University. Its role is to advise the President on matters relating to the development of educational television, and specifically of <u>instructional</u> television, as a service to the academic departments of the University. It also functions in a staff relationship and in an advisory capacity with the several campus administrative offices and the campus heads of instructional television services.

Historically, instructional television was started at the University of California in 1958-59 at our two larger campuses, first at Los Angeles, and very shortly afterward at Berkeley, and then at San Francisco Medical Center. I'll hit just the highlights of the development at each of our campuses.

At Berkeley a television facility was first developed to handle the first major assignment that came along, which was the televising of the Edward Teller Physics 10 course. This was picked up in the classroom, distributed to additional students who otherwise would have been unable to take the course, and it was carried by KQED as a broadcast series under the program title, "Physics for the Layman." This Physics 10 course is being given again this semester because of the attraction of Edward Teller with a registration many times over the number that could normally be handled. It is also being televised to some three or four hundred students who otherwise wouldn't be able to take this course.

At the present time, in addition to the Physics course, television facilities are used to distribute to additional classrooms lectures in Mathematics, Psychology, Economics, Dramatic Art and Mechanical Engineering. In addition, a number of lectures have been recorded for delayed presentation in the Departments of Education, Botany, City and Regional Planning, and in the Law School. The School of Optometry has been provided with a small television facility which enables instructors to demonstrate techniques and clinical observations to an entire classroom simultaneously rather than in repeated demonstrations to multiple groups of three or four students each. They are also installing this year, a television facility in Tolman Hall, the new Education Psychology Building. The Education Department will be tape recording practice classroom demonstrations in schools throughout Berkeley, and bringing these tapes back to the Education classes. This has proved to be a big saving of time and money because we don't have to take the Education classes out to the elementary schools, and by tape recording them we are able to build up a considerable library of typical situations, so that the amount of visitation can be cut down as the years go along.

In the next two years we expect to establish at Berkeley, install and equip a central studio arrangement, a permanent distribution system throughout the central core area of the campus.

Los Angeles I'll not comment on because Dr. John Beeston from that campus will report on UCLA operations.

During the past year the smaller general campuses - Santa Barbara, Riverside, and Davis - have initiated instructional television facilities, or plans for facilities to be installed this summer and to become operative with commencement of the fall semester.

At Santa Barbara within the next two months we will have completed construction and installation of two television studios and a control room in one of the new classroom buildings on the campus. Distribution cables will go out to all the classrooms in that building. Starting in September, all of the sections of the Biology course will be, will receive their lectures simultaneously and entirely by television. Lectures will originate in the studios where the camera facilities will pick up not only the lecturer himself but microscopic demonstrations, visual presentations, live specimens, skeletons, dissection demonstrations, and so on. This general survey course is one of the fastest-growing courses on the campus because it is a required course in the Liberal Arts area, and they have projec-

ted the enrollments over a number of years and, in this projection, he has pointed out that the television facility that will start in September will enable essentially the same complement to handle the increase of enrollments in this course over an indefinite number of years; and these enrollments in this course are expected to considerably more than double in size.

There are one or two other courses that will start in with this facility at Santa Barbara at the outset. Our predictions are that within about two years we will have reached the capacity of that facility that is being installed now.

Riverside will have placed a small television unit in the Life Sciences Lecture Hall, largely an intra-room device for showing visual phenomena and microscopic materials to large classrooms simultaneously. I don't think we will be getting into studio-originated lectures at Riverside for another two years because the size of class courses hasn't developed far enough.

We will have completed installation of a facility at Davis campus this summer, and it will be ready for classes in September. This facility will be centered in the Veterinary Medicine School, but will also be utilized by the general campus courses as well. I'll not go into the details of how this will be used in veterinary medicine because it is practically parralel to the situation in the San Francisco Medical Center. The teaching and the disciplines in veterinary medicine are very similar and all of the saving of instructor time and student time that has occurred in San Francisco apply at the Davis installation.

There are a number of other courses that will be using this installation at Davis. We have now a large enrollment and multi-section courses that are being presented in Psychology, Economics, Geology, Political Science and History, and over the next couple of years I believe that all of these will be presenting their lectures through studio-originated television.

During the next couple of years at Davis, we should see the installation of a permanent studio; the first one will be set up on wheels, pretty much as it is at San Francisco. We hope to get that permanently installed and put in a tape recorder so that we can record demonstrations, clinical operations, and so on, which can be repeated; and it is also going to be needed at Davis and at Santa Barbara for delay repeats of lectures. To illustrate: At Santa Barbara this Biology course that I spoke of, because it has to be given live to all students at one time, will take up every single room on that campus that we will have equipped with television viewing monitors, and any gross beyond that we're going to be out of luck. So we're hoping to install a tape recorder there so that we can offer the course about three different times throughout the day, and it will make a whole lot more efficient use of classroom space.

Medical instruction, Dr. Merrill has already discussed. The Los Angeles Medical School has been developing some experience in the use of this medium during the past two years and a major instructional television service will be established in this Medical Center in connection with the fall semester. Plans similarly are being made for a medical instruction facility at the newly-installed San Diego

Medical Center that goes into operation three or four years from now. We're working closely with both the academic and the architects on that and hope to have that installed so that it will be pretty much of an ideal operation from a television standpoint.

STIERN This would not be on wheels, this would be a permanent

PALTRIDGE With medical work, you have to keep a certain amount of it on wheels because you have to go to clinic areas, you have to go to surgical areas. There's a big advantage in having a central studio because a great deal of work can be done in a central studio, and by every one central studio you can get by with a much smaller complement of equipment set up on wheels. In all, it makes a more efficient operation.

STIERN The reason I asked is that I was in the Colorado State University in their School of Veterinary Medicine and their building, it's a new building, about ten years old and it contains jacks so that they can produce anywhere in the building and I just wondered if, in the plans

PALTRIDGE Well, that will come about. For instance San Francisco Medical will now have a distribution system to 110 areas where they can either originate or receive in any one of those areas, but you still have to move your camera and control equipment around. I don't think, and I think Dr. Merrill will bear me out in this, you can never completely escape a certain amount of mobility in a Medical Center, but the whole thing can be a whole lot more efficient with a single good-sized studio operation.

Dr. Merrill mentioned the use that the University Extension is making in the Continuing Education in Medicine field, and this has been a major factor in being able to get practicing physicians, nurses and dentists to come in for short briefing sessions where their time is important and the time of teaching them is important, and being able to handle a pretty good-sized group at once is something that only television has been able to do. We're using television in extension work on a smaller scale. We're doing some work in it at Berkeley where both credit and noncredit courses have been broadcast, prepared on the campus and broadcast, for instance last year we did a series on problems for small businessmen, resulting as a noncredit extension course largely as a public service offering. At Los Angeles Extension Division are done two very detailed program series on in-service training for teachers, broadcast over stations in this area and also relayed to stations in Santa Barbara, Bakersfield, San Diego, and I believe over in the San Bernardino area.

Our experiences with University Extension in televising in-service teacher training courses may be of some value to our school districts as they prepare for the expanded program in Spanish Language Instruction, not from the standpoint of the instruction itself, but from the standpoint of in-service training to teachers and, over a period of time, I'm sure something can be done that would be worthwhile to this overall program. We haven't done anything on it as far as the new campuses are concerned yet except architectural planning in that we now have issued a general rule to put television conduits in all new buildings so that we can plan from there. We're not actually installing cables, but once you get the conduit or tubing in it takes care of 90% of the problem.

In looking to the immediate future - that of the next year or two - we see the probability of a gradual development of the use of television in instruction, and an increasing familiarity, experience and acceptance of this instructional tool by our faculties. Large-scale and dramatic "break-throughs" are not to be expected, and such has not been the experience in the development of instructional television by other universities. The pattern is more apt to be one of progressive development in areas where the expense of television can be justified and where the instructional situation is such that the medium can contribute to the improvement of teaching and to the more efficient utilization of instructional funds.

During the past year we have undertaken a major study of class enrollments on each of the general campuses of the University. I've touched just a couple of highlights of that because it might be of some interest as far as the growth, the anticipated growth is concerned. We expect this to present us with some information on the factors involved in long-term planning of instructional television facilities. It should give us some estimate on the number of courses on each campus which might be expected to utilize instructional television when those campuses reach their full development. This in turn should provide us some guiding information on the extent and the size of the television plan that will be required to service this amount of instruction. The first measurement of these possible potentials has disclosed one or two facts that I believe are of particular interest. At Berkeley, for example, where last year there were presented 1342 different undergratuate courses of instruction, it was determined that there were 66 potential courses which might advantageously and justifiably utilize the medium of television. This figure does not include certain highly specialized areas of instructional television such as classroom observation and other areas where television is not likely to be used on a scheduled or regular classroom basis. Now these potential television courses represent approximately 5% of the total number of undergraduates courses taught on the campus. Not surprising, however, is the fact that these 5% of the courses account for approximately 30% of the total combined course enrollments. Santa Barbara figures are about the same; 4% of the courses seem to be the potential for television, and they represent 27% of the combined enrollments. Los Angeles is 5% and 27%. In other words there is a remarkable similarity between the campuses both enlarged and small, in these two particular percentage figures. This in turn may provide us with a basis for evaluating the extent and the relative importance of this medium as far as the overall teaching is concerned.

We regard instructional television as one of the several academic services which may hold promise of helping maintain and improve the quality of instruction in our approaching era of accelerated enrollment growth without equivalent increases in cost. In regard to television we will see the event of these things: (1) instructional television is not, in the University context, an inexpensive facility or teaching method. It does, however, hold some significant implications for fiscal efficiency, particularly when it is examined in the light of increasing problems of qualified faculty recruitment and the complexities of the new curricular planning and of time and structural space scheduling, which

are being forced upon us as modern university education and professional training become more sophisticated. We believe it is capable - notably in many of the larger enrollment and multi-section courses - of allowing us to improve instruction. And as these courses grow even larger it should help us to avoid commensurate increases in costs of teaching them.

As to faculty acceptance, on the whole, like the experience of most other universities, it has been characterized by a certain amount of caution and the desire for replicated testing and research, and by non-uniform degrees of acceptance in different areas of academic study. But on the whole the progressive attitudes and increasing acceptance of the use of television in the most significant areas and particularly on our newer and fastest-growing campuses, it has been gratifying.

I believe that we are going to find that television is going to, instructional television is going to find a bigger role in the now-smaller and fast growing campuses of the University perhaps than it will on the larger campuses.

In regard to student attitudes toward television this has varied considerably. I think it's important however that the universities are now receiving an increasing number of students who have had exposure to or experience with television instruction with their high school and elementary grade levels. Since the more exposure the student has had to instructional television the more enthusiastically he participates in additional instruction of this type, and it appears that the acceptance of university level televised instruction will increase each year. Student acceptance, like faculty acceptance, appears to grow with the time and experience. The University will justify continued use of this medium only as it provides the means of maintaining and improving high standards of instruction commensurate with its ability to produce economies and alleviate the problems of growth.

Thank you.

FARR Thank you. Any questions Senator Stiern?

STIERN No.

FARR Yelvington?

YELVINGTON Yes, I have one question. Mr. Paltridge, does the University use television for instruction in the Extension Division?

PALTRIDGE It has not used it in classroom Extension Division work. We have done some small amount of broadcasting work at Berkeley and at Los Angeles, most of it noncredit courses for offering of extension credit in correspondence on the Harvey White series on continental classroom and the Peter Odegard series on continental classroom, and Los Angeles has done these two extensive series of fifteen to eighteen programs each for elementary and secondary school teachers offering in-service credit through their local school boards, but it has not been used so far in classroom teaching in Extension.

YELVINGTON Is the University exploring television as a possible means of extending their Extension Division?

PALTRIDGE Yes but there are a couple of problems on that. As a matter of fact Dean Sheets asked me to attend his three-day conference next week that, on that, and present a paper on the extended use of

television for extension work. We're giving quite a bit of thought to it. One of the problems in that area of extension is that extension is now kind of under the gun to go on a pay-as-you-go basis and it's quite difficult, not only in our experience but that of most of the other universities in the country that I have visited, to have television, televised extension courses pay their own way on the basis of the enrollments that you can get in the viewing audience. You get a great big audience for these programs but the number that will actually pay $30 or $40 to enroll in a course usually doesn't produce enough revenue to pay all the expenses of producing the course. We've been getting by so far because the commercial television stations have not only been donating time but the expenses of production, in some cases even paying honorariums to the instructors, and in a few isolated cases outside funds have been made available for this extension work. This is the critical problem as far as extension is concerned.

YELVINGTON You almost need a closed-circuit setup, actually, to really make it pay.

PALTRIDGE Well, a closed-circuit setup will work best only in a case where you have a large number of students to instruct all at one time. Generally speaking extension courses don't get into the 200-250-300 enrollments at a crack that you get into on the campuses.

STIERN In Medicine, for the School of Veterinary Medicine working demonstrations through high schools and vocational agriculture or with agriculturists, is there anything being done in that area?

PALTRIDGE For several years now - the last three or four years - Davis, through the Veterinary Medical Association or some such association of veterinarians, has put on a three-day clinic covering pretty much the whole field which has been televised and tape-recorded. I beg your pardon, in the past they have been filmed. The Veterinary Association has used these films quite widely both in education use and in Continuing Education programs for veterinarians throughout the state. I would imagine that the opportunities for extending this work would be much greater when we have a television facility and particularly when they get a tape recorder up there at Davis.

FARR Thank you very much, Mr. Paltridge. Mr. Beeston would you come forward please and could you just tell us how the program, (I think from Mr. Paltridge we got a pretty good idea of how the program is working at Berkeley), rather than read the statement you could just give us a summary of what you're doing that might differ from what you're doing at Berkeley.

JOHN BEESTON, CHAIRMAN, CHANCELLOR'S COMMITTEE ON TV, UNIVERSITY OF CALIFORNIA AT LOS ANGELES

Thank you, Mr. Chairman. I'm Dr. John Beeston, professor of preventive medicine and public health at UCLA, Chairman of the Chancellor's Advisory Committee on Television and Other Audio-Visual Media.

We have been doing substantially the same kinds of things as at Berkeley and at San Francisco, and as you know we have a Medical Center on the campus, so we have to do both of these things. We have of course been handicapped in terms of funds and having to spread them as far as possible, so we have with ingenuity of technical staff manufactured a good deal of our own equipment with some special modifications for the special jobs that we have done.

We have concentrated on three main things: (1) The development of television as a classroom magnifier, what we call the Overhead Television System. That, if you look on page ten of the sheet I just gave you Mr. Chairman, there's a diagram showing just what that is and you will see (it's Appendix I which would be Page Ten although the number 10 does not appear there) that this provides the instructor with an overhead camera with a zoom lense which he can change the focus of and anything which appears on the desk where he is writing or what he wants to show a page of, a book or such, becomes magnified and appears on the screen for the class to view right there in the auditorium. We have some buildings with coaxial cables for this system, which then is connected up with the second part which we have concentrated on which is on the next diagram, which is the system we call the Central Television Projection. (2) Now this embodies the 16mm sound projector located in the basement of the Engineering Building with also 2 x 2 and 3 x 4 slide projectors, which are cabled up to the fourteen buildings I mentioned and provide for the showing of movies or slides in the classroom under the control of the instructor himself and if you look at the next page, rather Appendix III, the next diagram shows you what the instructor's podium looks like. It may look a little bit scary but once you've gotten used to it it's very simple to operate. The camera up above with the zoom lense which allows you to focus up and enlarge the image to fill the screen; on the left at the bottom there it says, "Start", "Stop", and "Reverse", those are the buttons that the instructor pushes and this starts the projector in the building which may be half a mile away, starts the camera going; he can stop it any time he wants to if he wants to show something on the screen. He can reverse it to go back and do it over again, or he can switch to slides giving great flexibility of visual presentation in the classroom. I've been using this system in one class for the last three semesters and I was kind of enthusiastic about it when I started, but after using it I became very enthusiastic because, in fact, it made me revise a course I'd been teaching for fifteen years. I completely reorganized it; I got to the point where I almost had to write a script for each lecture because it was quite demanding in terms of having to arrange things, when would I show the film, when would I stop the film, what to show, and so on, and I am greatly convinced that this has improved my own presentation here as well as revived it and refreshed it, because after fifteen years it had to get a little rusty as you might imagine.

STIERN And all the other instructors wanted to do the same thing so perhaps...

BEESTON Quite right.

(3) The third thing that we have done which has been inevitably forced upon us, because we have not had studio facilities, neither have we had video tape facilities at UCLA. We have a capital fund starting July 1 of this year for the first time which will allow us to get into the video tape area which will greatly improve our flexibility. We have been kinescoping in this past two years, but we now will be able to kinescope and have video tape. So we have had to be very flexible. And the third thing we have done, then, is to develop a truck. Now we have our own truck which has been devised

with great efficiency to take two cameras and four monitors, and the truck itself serves as a mobile control room so we can go anywhere on the campus and virtually provide any building that is not connected up with the system I previously mentioned, with flexible facilities. So during the past four years I think that there is hardly a department which has not experimented in some way or another, including the whole of the Medical Center, Dental School, Nursing, and so on. Not only does this provide the campus with flexibility, but we can go off the campus; anywhere a truck can go, we can go. Last month we were down in the Statler Hotel in Los Angeles hooked up with the convention of the American Dental Association where we were able to put on the screen, king-sized screen, a tooth that would scare anybody with a drill going into it which gives a wonderful view, better even than a dentist sees, but I don't know what it does in terms of traumatic effects to people's future lives or what night nerves they might have.

FARR Could the USC football team see this?

BEESTON We haven't got that far yet but we do, with a video tape and all.

Those are the chief differences I think, or the chief things that we have stressed. I would, however, just like to end with one opinion piece that I would read here, because I think we have a philosophy which is important in this whole area. During the last two years the Committee on Audio-Visual Media at UCLA has been working towards the integration and wider use of all communications devices used in teaching. We do not see educational television as a separate activity operating in a vacuum or in competition with older methods of instruction, but as a new and powerful part to be added to others in the audio-visual field. To this end we are putting the finishing touches on a master plan to consolidate all our communication resources and techniques into one administrative system. This will place television, motion pictures, the film library, graphic and photographic production, language laboratories, teaching machines, and other communication devices under one administrative organization. Funcionally it will operate in two major campus locations, one in the Medical Center and one in the north campus area. Each of these will be the local headquarters of all communications systems including television. We believe that this will not only enable television to be used by all those who need it, but will make it possible for the experimentation and selection of the best medium or combinations of media in any situation. In creating this system the committee has had constantly before it the view that television, motion pictures, and other audio-visual devices are primarily tools of communication. The role of the University is to discover new knowledge through research and then release it effectively by teaching, so that learning may take place in the recipient. Storage of knowledge and ready release from storage are two important parts of the learning process. In the fifteenth century the invention of the printing press made hand-illuminated manuscripts unnecessary. It led to the development of mass learning, newspapers, free public libraries and the paperback. Television, as one of the Twentieth Century's advances in communication will undoubtedly be responsible for even more dramatic changes in the distribution of knowledge. At UCLA we are planning

to consolidate all our modern communication technologies into one system which can assist the faculty to improve their quality and quantity of research and teaching.

At the present time, one of the criteria which is used to rate the excellence of a university is the size, organization and excellence of its library; the centuries-old academic communication system. The time should not be far off, when rating institutions of higher education will also include the extent, nature and quality of more modern ways of communication, of which television is undoubtedly a highly important part.

FARR Thank you, Dr. Beeston. Senator Stiern, do you have any questions?

STIERN I have no questions.

FARR Mr. Yelvington?

YELVINGTON No questions.

FARR I'd like to ask you a couple of questions if I may. How do you feel this program developed at UCLA, that you can tie in your activities and be of service to the State Colleges, or how can the State Colleges be of help to the University. It seems to me we are going to put a considerable amount of taxpayers' money into this program of educational television, and we have our State Colleges here and in other parts of the State, we have our junior colleges, and we've got our secondary and elementary schools. Now how can we coordinate these activities and what do you...

BEESTON I would see, Mr. Chairman, that the role of television might be one of the most important ways in which the integration of the master plan for higher education might be implemented. Anybody who is videotaping or kinescoping is providing a store device that can be used anywhere you have the equipment to show it. This would mean that anything made in one level of education, if the equipment is available could be used in another. I would see, therefore, that this would be a valuable device for making freely exchangeable package deals of all kinds.

FARR Thank you very much. Mr. Loper, Television Coordinator for the Los Angeles State College?

JAMES L. LOPER, TELEVISION COORDINATOR, LOS ANGELES STATE COLLEGE

Senator, we will be using the television monitors as an intrical part of the presentation, the ones behind you, so if you would turn around in your seats...

FARR Do you want to summarize this statement?

LOPER Yes.

Mr. Chairman, I am James Loper, the Television Coordinator of the Los Angeles State College campus. I will summarize briefly the prepared remarks which I have made for today, and we would then like, as an intrical part of the program, to show you excerpts, short excerpts ranging from two to three minutes, from each of the television courses which we have been teaching this year, to demonstrate certain problems which we have encountered and overcome.

Los Angeles State College has been using television as a regular part of its instructional program for some three years. During that time seventeen separate courses have been offered - ten on

open-circuit and seven on closed-circuit. All ten open-circuit courses have been offered for both campus and extension credit with facilities made available for campus viewers. In the case of one course broadcast, during the second semester, 1961-62, television tape recordings were re-played over the campus distribution system during a late afternoon hour to add an additional section of the class.

Altogether some 4,643 on-campus students have received a portion of their education on television in three years, nearly half of the total enrolled during the school year just completed. Seven hundred twenty-five extension students have enrolled for college credit courses taken in their own homes, and we might add that thousands more have viewed during the same period but not for credit. During each semester of the school year 1961-62 just concluded, the broadcast service center at Los Angeles State has produced 5 1/2 hours of original television material each week. However, during the first semester, some of these course sessions were repeated several times by means of television tape recording for a total of ten and one-half hours per week of instructional time. The amount of playback time was increased to fourteen hours per week during the second semester as departments added additional viewing sections. Projecting into the future we might add that the total amount of instructional time per week on campus this fall will reach twenty-five hours, all on tape and utilizing the tape recorder for playback uses.

Television teaching at Los Angeles State has been utilized by various departments for a variety of reasons. In all cases, however, the course configuration, content offered, method of measuring effectiveness, and teacher selection has been entirely in the hands of individual departments. The College's Television Center is responsible only for translation of the teaching presentation into an effective television presentation and for the systematic transmission of the lesson material to the classroom. For this reason, since evaluation and measurement are in the hands of cooperating academic departments, it is impossible for me to report on the effectiveness of television. However, we might add this: All of the courses which have been televised this semester are continuing next year and they are adding additional viewing sections.

Through television, each department involved has been able to solve certain educational problems. We would now like to offer actual sequences taken from course material offered during the last two weeks of the school year.

Art 150, "Art, Music and Dance," is a basic humanities course in the College's general education program. It is taught by a team of three instructors, each a skilled lecturer and artist in his own right. Some 1,558 students were registered in Art 150 during the last two semesters. The number of students in the course is expected to increase drastically during the next few years. Expert teaching teams to handle the demonstration portions of the course are difficult, if not impossible, to find. But, using television and tape recording, the same team can teach to almost an unlimited number of students, while increasing or at least holding the quality of presentation. Through television, artistic experiences impossible in the conventional classroom can be presented - experiences such as

this program of operatic excerpts, utilizing Los Angeles State students and faculty.

(Television scenes)

To form these operatic excerpts, any type of demonstration in dance or music, to convey the material that the teacher wishes to put across, is much easier to do on tape. It can be repeated four, five, six times during the week than for students in viewing.

In English 150, "Written Expression," the basic freshman English course on the campus, the English Department had encountered the problem of stabilizing the quality of instruction in the face of rapidly mounting enrollments. The solution in this case was to find two interested professors, each an expert in his own specific area, and to assign them to the lecture portion of the course. At the same time the two professors acted as coordinators for a group of teaching associates who taught small group writing laboratories. There was a great deal of correlation between these two faculty members and these teaching associates, and there were those who wondered if an English composition course could be effectively taught on television. But new situations called for adaptations of familiar techniques such as the overhead projector. (Television scenes)

It is difficult, if not impossible, to read the sentences and words on the screen. However, I might further point out that this particular class on television is housed only in very small classrooms. We do utilize this room occasionally for television viewing, but only when the necessity of seeing fine details is not important. For this type of program we go to very small classrooms with perhaps no more than twenty in the classroom; in multiple classrooms the throw from the television screen is probably no more than twenty feet from the screen to the person in the very back of the room and so television can be effectively used. This was one of the problems that we had to overcome, and we did make a shift from larger rooms to smaller rooms after some experience in the first few weeks.

In this particular course which you just witnessed, we had the problem of stabilizing instruction. We also had that same problem in Health and Safety 350, "Personal Health and Safety." An additional problem in this course was the effective visualization of certain teaching materials such as injury mock-ups in the First Aid unit. Using television, more elaborate preparations could be made than would be economically possible for 30 students in a single classroom. Another problem solved by multiple playback performances on television was the exposure of guest experts to students enrolled in all sections, rather than only to those sections which could conveniently be scheduled. In the past, it might be possible to find an expert on Mental Health, or Public Health, who would be willing to come in and talk to several classes at a time, but not all classes could be covered. Now let's see what happens when we can tape-record an expert, play him back to all classes of this course. Witness this discussion of air polution.

(Television scenes)

This expert was able to talk to all of the section, nearly 600 students enrolled in this course.

We come now to the final demonstration of the telecourse, our open-circuit course during this

second semester just concluded. During the first year of Los Angeles State television activity, broadcast time from a local station was obtained free. During the last two years, however, the College has utilized time purchased under a contract arrangement. However, free time has again been made available by cooperating stations for a course to be offered during the 1962 summer session, and beginning in the fall of 1962 the College has obtained six half hours per week of free time to offer television courses, discussion programs, and programs of general cultural and educational interest.

This course that we will see in a moment, Visualization of Ideas, was specifically involved in "Literature and the Fine Arts" presented on open-circuit during the last semester. In the conventional classroom, the two instructors themselves manipulated slide and film projectors, phonographs, and tape recordings to produce the desired aesthetic experience. But on television the various elements can be blended by effective production techniques, freeing the professor to concentrate on his lecture material. In the excerpt that we will see in a moment, it was possible to blend the music of Offenbach, the paintings of Toulouse-Lautrec, to offer the experience, the story of Paris, at a given time in history. This was then tied in with the course perhaps on the next day, of a work of literature which was set in Paris. By doing this, the instructors were able to do much more than they could have in the classroom.

We're still getting distress signals. We're doing this today with one tape-recorder and changing tapes while I'm talking, so it, we had hoped to dub it, but with one recorder you can only do so much.

Great interest has been expressed in the cost of television education. It is highly difficult on the college or university level to determine student hour costs in conventional teaching alone, let alone television teaching with all of its variables. With a schedule of some twenty-four hours of playback and six hours of original recording beginning in the fall, I might add that with the equipment we now have available in the broadcast service center on this campus, we will be operating very close to capacity, and if we are to take on any additional courses or additional work, the facilities on the campus will have to be enlarged.

Many of these new services which have been requested by various college departments are of the type such as teacher observation, which, while vastly improving the educational situation, cost money that cannot be offset by savings in personnel or scheduling of facilities. Television can be expected to save money in some areas, to cost money in others, but to do an effective job in teaching our students we must have the proper equipment and personnel. Without the basic tools or staff, the whole area of instructional television I feel, will flounder in mediocrity. With proper funding, television can offer a way of effectively helping to meet the educational challenge in the California State Colleges. Thank you.

FARR Dr. Loper, we want to thank you for making available the facilities of Los Angeles State College and we also thank Dr. MacDonald on behalf of the Committee. We appreciate the very fine lunch you set up today also.

YELVINGTON May I add that Mr. Loper and the staff at Los Angeles State College really saved the Committee Staff's lives when they made a secretary available this morning after our late arrival, to get an agenda out and I very much appreciate the exceptional cooperation which we have received from Mr. Loper and I'm very pleasantly disposed toward Los Angeles State College, I assure you.

FARR Right now I would like to call Mr. Borden Mace, who is president of the Heath de Rochemont. Will you identify yourself for the record, please?

F. BORDEN MACE, PRESIDENT, HEATH DE ROCHEMONT, BOSTON, MASSACHUSETTS

I am Borden Mace, President of Heath de Rochemont Corporation, Boston, Massachusetts.

FARR Excuse me, could we have some more lights in here now?

MACE I'll try to skip through some of this in view of the time and hour.

I've been asked to testify for what might be expected from industries in connection with Section 7604 of the California State Code of Education.

First I'd like to say to the authors and sponsors of the so-called Casey-Bee Bill, and to the legislature that turned it into law, "Congratulations and bravo and well done!" I think I can safely say that these congratulations come from almost everyone in this country who is concerned with foreign language instruction: from the Office of Education in Washington, which has increasingly emphasized the need for more and better foreign language instruction; from the Modern Language Association, which has long recognized the need to begin language instruction early and to make it sequential and continuous; from all those in other states for whom you foresighted action may pave the way for similar legislation; and - last but by no means last - from the voting public, including an average of more than eight out of ten of your constituents, as a recent Gallup Poll has shown.

Second, it seems to me that though Section 7604 (c) has many implications that perhaps need further clarification, it is essentially a sound and practical compromise between going too far all at once and not going far enough. Language experts would like to see the child begin foreign language instruction in grade one, or even earlier. The Modern Language Project recommends that our Parlons Francais program be introduced in grade three or four. And yet the authors of your Bill had to face the practical consideration of how much could be done at one blow; and they reached down to the sixth grade, which is perhaps the most significant and exciting part of the Bill. Foreign language instruction will, for the first time, be a compulsory part of the elementary school program, where - and linguists are virtually unanimous in agreeing on this - it belongs.

STIERN I might interrupt you to say that, in your praise of this Bill, it might almost cost an author's seat, as it had an impact in some areas.

MACE Other problems may not admit of such an easy solution; (I was talking about the language in your program, the instructional materials), and yet to yield to pressures to solve them by upping the beginning grade level would seem a serious mutilation of the legislation. It would be a blow to the many fine foreign language programs that already exist in many elementary schools in California, just

when their administrators are looking to the new law both for help and for official recognition and status. It would discourage those many counties and districts that have already done considerable study and planning as to how best to implement the law. It would be a disastrous setback to foreign language learning, as presently projected in California, if the beginning grade level was upped.

It would be saying to the rest of the nation in effect, "We can't do it."

This brings me to my last general remark, which is of course that we can do it. The tools exist to do the job, without excessive cost, without excessive disruption, without excessive change, without, in fact, an excess of anything at all except that attention to new media, materials, methods, and systems that California justly is famous for giving. You have passed a law, and it is a good law - one perfectly admissible of implementation, as those who passed it surely knew at the time. And now I'll get down to what Heath de Rochemont, as private enterprise, has done, is doing and plans to do in the future that can help you to implement this law.

Let's look at the Parlons Francais program. Before I do I may have to explain two separate organizations involved in this one program. One of them is The Modern Language Project - a non-profit educational agency with an advisory committee of fifty of the nation's leading linguists, educators and teachers. Its function is to design, develop, author, and control continuingly the content of, systems of elementary language instruction, among them Parlons Francais. The Heath deRochemont Corporation, on the other hand, is an affiliate of two commercial corporations, deRochemont Associates and D. C. Heath and Company. One of its major functions is to support and distribute commercially the systems produced by The Modern Language Project, now largely underwritten (to the extent of approximately two million dollars, to date) by Heath deRochemont. Thus Parlons Francais, though produced on a non-profit, research basis, has behind it the resources, organization and facilities of two important corporations, who have combined their "know-how" in bringing to the communities of America the results of this break-through in education.

You'll find the complete details in this packet which I have given to you, that Parlons Francais is a complete system of language instruction for the elementary school from the fourth grade upward. It utilizes television, films for in-school use, includes teacher-training films, drill records, teacher guides, student records and activities books - every tool necessary to students and teacher for French language instruction. It is built largely on Anne Slack's six years of experience teaching French via television in Schenectady, New York. The Modern Language Project was created in 1959 and now offers three continuous, sequential years of French language instruction, with a fourth year in preparation for use this coming fall. Two 15-minute televised lessons weekly - a total of 60 student lessons yearly - are combined with daily preparation and follow-ups conducted by the classroom teacher, with the help of teacher preparation programs and component materials for teacher and pupils.

Parlons Francais is the first, and the only, complete and systematic in-school course of instruction offered nationally on television. It's in every major area of the country except Los Angeles

In California, Dr. Clowes estimated that 600,000 California school children would be enrolled in the fall of 1965.

Parlons Francais had, this past year of 1961-62, an estimated in-school audience of two million, I repeat two million children, through the forty-three television stations in the United States and Canada that carried the program, and through the new film package, a photograph of which is included in the packet of materials being distributed to you.

Parlons Francais, as a tool for elementary language instruction, can enable you to implement the provisions of Section 7604 (c), not in 1965, 1964 or 1963, but <u>today</u>.

Parlons Francais, as a system of instruction, <u>works</u>. It is continually being tested and evaluated; and as linguists and educators and children all over the country enthusiastically testify, it works. Those of you in Northern California, where two years of Parlons Francais are now on KQED, can check this for yourselves, very possibly in your own neighborhood school. Indications are that enrollment this fall will be two to three times that of the past year, some indication of how educators who have seen this program in action feel about it.

Parlons Francais, of course, is no linguistic magic wand. It needs, for maximum effectiveness, careful planning by educators, enthusiastic support from teachers and help from state, county, district and local school officials. But with this help and support it works and works beautifully.

It is important to know that Parlons Francais can do the job under <u>any</u> school conditions. By that I mean that it can be used equally well as a tool in the hands of a language expert, as a tool for joint use by the regular classroom teacher plus the visiting specialist, or as a tool for the use of the regular classroom teacher with little or no fluency in a foreign language. Further, it is flexible enough, with its complete film package, to ensure language instruction anywhere in the State of California, even where schools receive no television, or an inadequate signal. There is therefore no reason why any school in the state could not implement fully and adequately the provisions of Section 7604 this year.

Also for your examination in the back of the room is a new 8 mm film on which the program also exists. This may represent a break-through comparable to the paperback in publishing.

Parlons Francais has a built-in teacher-training program. It is true that with the help of this system, an enthusiastic teacher with little or no language training can teach a foreign language; but we also recognize that the better trained the teacher, the better the program. We find that our system not only instructs teachers in the fundamentals of a foreign language but also interests and stimulates many of them to take up, on their own, further foreign language study. And it is these teachers who should eventually assume the major portion of the elementary language teaching job. A televised system of language instruction can work; and in fact today, with the tremendous shortage of language teachers, it is the only answer to offering such instruction at the elementary level. But we realize that it is less satisfactory than the fluent teacher, live, in the classroom, aided by all of the aud-

ial and visual instructional materials that modern technology can provide.

To correct myself, or rather let me amplify and explain that one statement. Parlons Francais can do some things that no classroom teacher could possibly do, no matter how fluent and capable. It can bring a foreign country right into the classroom. Our program, for example, is being filmed entirely on location in France, right now, at this moment. Children see and hear France, city and country, people, customs, history, geography - they come as close as is possible to actually living in the country whose language they are learning. Linguists tell us that this is the very best way to learn a language. Educators tell us that this is one of the most important benefits children derive from learning a second language.

Complete materials are now available for student testing and evaluation. They are here in the back of the room if anyone would like to examine them.

A national consultancy service is available at no cost to users of Parlons Francais, to help administrators, supervisors, and teachers to use it most effectively. One of our specialists has already been working in the San Francisco area.

Parlons Francais makes possible - here, now, today - sound tested, proven, effective, inexpensive language instruction to every single one of the elementary school children in California. In French, that is. But perhaps you're wondering about Spanish. In fact, I hope you're wondering about Spanish because there's good news. The Modern Language Project has already begun to create a system of Spanish instruction analagous to Parlons Francais. Scripting has commenced, pilot materials are being developed for testing and evaluation during the summer and fall of 1962, and the first-level program will be available beginning in the fall of 1963, with succeeding levels to be created and made available each following year. Like Parlons Francais, the Spanish system of instruction will be complete, fully integrated, sequential, designed to be used by the regular elementary teacher with no previous language training.

But the Spanish Project will have the tremendous advantage of being able to utilize The Modern Language Project's years of experience with the Parlons Francais program; and the result should be terrific.

I take real pleasure in being able to tell you that the program is heavily California-oriented. The Modern Language Project decided, after an exhaustive committee study of the finest Spanish programs, some 23 of them, in the country, to work with and to build upon the program developed over the past three years by the Pasadena school system. This evaluation of programs took at least eighteen months; fifteen tapes from the existing programs were examined and the final determination made about six months ago. The material handed out to you is a copy of a letter from Dr. Jenkins, the Pasadena Superintendent of Schools, to the Executive Director of the Project, carrying the good word that final arrangements have been approved, both for the cooperation of Pasadena and for the use of Yvette Miller, Pasadena's stand-out television teacher of Spanish, as the master teacher for the Project's Spanish

program. I would like to quote from Dr. Jenkins' letter: "We also carefully reviewed the arrangements which you propose for the Pasadena City Schools as we continue to work with the 67 school districts in Southern California that are using our program. We have agreed that these arrangements will be most helpful to us and appreciate the fact that they recognize the strong financial support and intensive staff effort that has made the Pasadena program a success during the past three years."

We would also like to compliment Pasadena and its staff on the fine program and to thank all those concerned for making it possible to use their pioneering efforts to create a program of service to the entire country.

Another reason for my enthusiasm in releasing this information to you is that the Spanish Project's special advisory committee, consisting of the top people in the Nation, headed by Professor Theodore Andersson, Chairman of the Department of Modern Languages at the University of Texas, is heavily Californian. Among the eight other members on the committee, four are from this state: Dr. Jenkins of Pasadena; Mrs. Margit MacRae of San Diego; Dr. Cecelia Ross, University of California at Berkeley; and Raymond L. Smith, Director of School Broadcasting, Station KQED in San Francisco.

Finally, the program is now being developed and produced in California; it will be tested and evaluated here and elsewhere; and it is being designed to more than satisfy the highest of elementary Spanish programming standards.

By 1963, additional tools will be available to you to implement the provisions of Section 7604, and in Spanish.

One of the most encouraging developments in this whole field of elementary foreign language is the televised in-service Spanish language training program for elementary teachers proposed for the coming fall by the Bay Region Instructional Television group known as BRITE. This is an example of how an area is planning ahead to meet the provisions of Section 7604, and to meet not only the letter, but the spirit of the law. The Spanish Project has offered its full cooperation to BRITE, including the services of Yvette Miller and the entire staff, and I assure this subcommittee will be glad to cooperate in every possible way with any other projects in this state that seem to offer as much potential help to the cause of foreign language learning in the elementary school.

May I thank you collectively and individually for your attention and I once again compliment the California legislature on passing a most forward-looking, and at the same time a most practical, piece of legislation.

FARR Mr. Mace, I'd like to add a word to that too.... Mrs. Miller?

MRS. YVETTE MILLER, TELEVISION TEACHER AND CONSULTANT, PASADENA UNIFIED SCHOOL DISTRICT

I am Yvette Miller, television teacher and consultant for the Pasadena City Schools.

Before I make my statement I would like to add some materials to it, and I will give it to Mr. Yelvington.

I consider it a privilege and an honor to be here and to be able to give my point of view of

language instruction at the elementary level, based on my previous three years experience with boys and girls and with over 3,000 teachers in Southern California.

My reaction to the question posed to me as to the possibilities of ITV as an approach to foreign language instruction would be, generally speaking, the same as my reaction to the use of ITV in other areas of the curriculum. That is, I feel that in order for ITV to be a worthwhile educational experience for children it must bring into the classroom something that the classroom teacher cannot provide. In my mind ITV must not only do it as well, but it must do it better than the classroom teacher.

Keeping this in mind, I would like to point out all of the positive aspects of language instruction via education television. However, in order to more clearly understand the function of educational television in the teaching of a foreign language, one must understand how a foreign language is learned, at what age level it is most beneficial to teach children a language, and the methodology one should employ. Otherwise, I think we are going to look at it and be negative about it before we even look at the medium and how we can apply it.

If we are going to look at language instruction via television objectively, we must first of all believe in it, and I too would like to express my appreciation, as an elementary teacher, as a parent and as a citizen, to the senators who could foresee the need in our country for language instruction at the elementary level.

First of all I think we must feel that it has to be a part of the regular curriculum, as important as another phase of the curriculum. Then we must face the realization that elementary teachers are not prepared to undertake this task. Therefore, it is our responsibility to help them in every way possible. Hence, I feel that educational television is the immediate answer.

As a language teacher and an elementary teacher, I would, naturally and honestly, have to say that the best way to teach anything to a group of children is to have a master teacher with a thorough knowledge of the subject matter she is teaching, and say, a group of 20 - 24 children whereby she can meet the individual needs of these children and take them from where they are as far as she can. This is true in mathematics, and in science, and I also believe it is true of foreign language.

We know that our elementary teachers do not have this background in language. We also know that many of our secondary teachers have for many years had the knowledge of the linguistics of the language, but not the fluency of speech, I'm sorry to say. We also know that we have failed in the past to turn out bi-lingual students, and I honestly feel that in this way we have failed our country. I feel this every time I visit a Latin-American country.

So, then, is there an answer? I feel there is a beginning of an answer, again I must emphasize, in ITV. Can you teach foreign language via television? I have worked for three years with it; I've visited hundreds of classrooms from Santa Barbara to San Diego; I believe the answer is strongly "yes we can." First we must keep in mind how we learn a foreign language; first we listen to it; then we imitate the sounds of the language; then we imitate the sounds of the language with comprehension;

FARR Excuse me, Mrs. Miller. I hate to interrupt you but this is going down on a recording there, and someone will transcribe what you say, and I think if you went just a little bit slower...

MILLER I'm sorry. I was trying to save time, and I'm a typical bi-lingual teacher, you know, they talk rapidly. Thank you.

Third is imitating the sounds of the language with comprehension; and the fourth step is using these sounds to express personal feelings and ideas, really making the language a part of you.

Then we go into the more mature skills of reading, writing and analyzing the language linguistically. For many years we have really skimmed over these basic steps and gone to the analysis of the language linguistally, and then we've expected people to speak the language.

Teaching a language at the elementary level beginning with the first step, that of allowing a child to become aware of the language, its basic sounds and patterns of intonation, can be done very effectively by television. Of course the television teacher must be a master teacher at the elementary level, I feel. She must also know the language natively, and I also feel that it is imperative that the television teacher accept this tremendous responsibility that he or she is facing, and realize that it is also important to know the linguistics of the language. This is something that you don't learn overnight; this takes help; help from people such as Dr. Presta, and people with this type of background.

FARR Excuse me. Would you just explain what you mean by the linguistics of the language?

MILLER By the linguistics of the language we mean basically analyzing the language. In other words we don't just teach a song, or we don't say, "This is the table," and next week we teach "This is the chair," and the next week we teach "This is the door," without really knowing why we are doing this, where we are beginning. We even have terms. Linguistics itself is a science; we have words for the basic sounds of the language. At the beginning of a language instruction course it is important that the child be exposed to all of the basic sounds of the language, the very first year of instruction, to make it linguistically sound. As we develop these patterns we must build on them in a logical order, taken step by step. In order to know this, and to know which step to take first, we must know the linguistic analysis of the language. In Spanish, for example, we have some difficult concepts in verbs. I am (the verbs ser and estar) I will give as an example. If we say, "I am a girl; I am ill," in English we say "I am." In Spanish we say, "Yo soy una muchacha," or "Yo estoy infirma," "estoy" meaning something that doesn't happen all of the time. But I am a girl, or "this is a table," all the time, I will always be a girl, but I will not always be sick. Now if we are going to be able to teach our boys and girls to really speak the language fluently, they have to know when to use "ser" and when to use "estar;" but not to have to think about it in such a word as, well is this a perfect indicative of the verb "so-and-so". But they have to be able to have this language be a part of them. And so in these first stages of language instruction we must present it to the child in a way that is meaningful, but in a way that it isn't a guess or hit-and-miss on the part of the teacher. You

see I fully believe that to be able to speak a language is one thing, but to be able to speak it and to teach it is something else. You can speak a language, but because you can speak it doesn't mean you can teach it. So in order to be able to teach it you must have the background of the analysis of a language, you must know what the language is about and you must take your children through logical steps and in sequential order, sequential development. This is basically what I am referring to. I am always afraid of elementary programs or any language program that is rightfully in this program, or where we sing songs and that's all, or learn poems and that's all, or present a PTA program. It has to be a sound, well-developed linguistic program. The children don't know they are learning the subjunctive, for example, the fourth month; but the teacher knows; the teacher knows where she is taking that group of boys and girls and how many steps they are going to take before they take this door that leads them perhaps into their secondary education, the level at the high school and at the college where they are going to take the children. This would have to be a well-planned program.

Now I've touched on some things. Besides it being very important that the television teacher is aware of these things, I also feel that it's very impracticable for us to think that we could train teachers by 1965, the elementary teacher who already has many responsibilities, to be able to be this type of an expert in the teaching of a foreign language. A foreign language is a science and I believe it is something that, unless it is done well, we can do more harm than good, and it has to be done logically and it has to be done scientifically. It has to be prepared by people who know what they are talking about.

Therefore, what can television do with the classroom teacher? Can this be done? Yes, but television sets the pace. For example, take your classroom teacher who is bi-lingual, who can speak Spanish fluently. Can television help your bi-lingual teacher? Going back to my statement that it is one thing to speak the language and another thing to be able to teach it, I repeat that it is imperative that this elementary teacher, who is not trained in language teaching, have some aid, some help until he or she becomes more proficient in the teaching of a language.

What type of help? Methods, the methods that we are employing, not only that type of guide or television series, or film series, etc., whereby the language is taught in sequential order, and it isn't, again, a hit-and-miss program. I've had the privilege of working with many bi-lingual teachers at the elementary level the last three years and they consider the television series, and the guides prepared in conjunction with it, a blessing. They don't have the time to do this kind of preparation that it would take to have the best type of language program for boys and girls. And again I stress that there is a difference between talking a language and teaching it. It's important to be able to do both.

What are the other roles of educational television, what else must it do? Of course in service education, the area of foreign language is imperative. The greatest in service education is the series

itself. A teacher can't help but learn the methods, the best methods, and also pick up the language if she's exposed to it three times a week for fifteen minutes. For example, teachers who have used the first year series for three years consecutively say to me, "Well, I really know the basic vocabulary now. I won't need you in a few years." And I say, "Fine, I hope that educational television then will serve a different purpose for you," You see we are not only teaching the children, we're also teaching the teacher. The children learn faster. It takes the teacher about three years to learn what the child learns in one year, as far as the language goes, but they are learning. They are also learning methods of good teaching, not only of a foreign language but of how to motivate children, how to get them excited about learning in general.

Then we also have, of course, in service education over television specifically aimed for the teacher, the helper. Not only to use a television series, but to become aware of the linguistics of the language and of the methodology that we must employ in teaching boys and girls. So that we are trying to meet the teachers' needs in these two areas this way.

Television can bring to the classroom, as Mr. Mace said the French program does, a foreign country of wide culture for fifteen minutes. I don't think we can teach culture here and foreign language here. As we teach the foreign language, you're teaching the culture the entire fifteen minutes. The children are watching a native person speak - the way they speak, the way they look, the way they dress, their mannerisms, the background, an incidental, perhaps a picture in the background about their culture. You're not saying to them, "This is what the Spanish people do," it's there; they see it; they feel it; you don't have to tell them; they learn. They're growing in the understanding of the people. I think television can do this. This is one of the greatest contributions. I feel that even if we had bi-lingual teachers at the elementary level, who spoke the language and also knew how to teach it, that educational television could be of tremendous service to these people because it could also bring the culture and make it more alive for the boys and girls. And besides that, it just makes sense, the more people you hear speak the language, the better for you as a student of the language, and we on television, or be it a film, can bring many people, not just one person. We have one major teacher but we also have boys and girls speaking the language. We have a man if the teacher happens to be a woman, or vice versa, because it sounds different sometimes coming from a ten-year-old and from an adult.

FARR Do you also talk about things that ten-year-olds would be interested in, for example, baseball or Little League, or something like that?

MILLER Yes. Two of the most successful lessons I did last year were baseball lessons. Of course we learned a lot about Spanish culture in those lessons about baseball, and the baseball part of American culture, and so many of the words in Spanish about baseball are just gulled from America, and the children enjoyed it tremendously. They had a feeling that they have Little League teams down in Venezuela, and we have them here. When you teach the language via television it's important to

make it meaningful to the children, so you teach them the vocabulary that is meaningful to them. You can still teach them the important grammatical elements of a language without them realizing it. You see there are two parts to a language: the linguistic, the grammatical elements of the language, and the vocabulary. You teach this difficult linguistic concept using vocabulary in situations that would appeal to boys and girls. You teach the children to listen, first and foremost. You know, if you have ever visited a classroom you hear teachers say, "Now, boys and girls, listen, now please listen." Well, they have to listen. We feel that you not only teach them to listen to a language, but we're helping them to listen in many other respects, when we are teaching a language via television. So it has many implications to good education besides just the foreign languages.

I see I got away from our point. I always do this. One thing that I would like to mention, however, is that I have some letters attached to it from many parents and children and teachers, and I feel so strongly that we are not only teaching the children Spanish in Southern California with our series, but we're also teaching parents, and we're not only teaching them the language, but more than that, I get letters from people who say, "You know, all of a sudden I think it's so much fun to have a neighbor who is from Mexico," We're helping, I think, people in our community to get along with each other, because they are beginning to understand the people that live right next door to them.

I received a wonderful letter from a child yesterday, special delivery. Actually not from the child, but from a child's home teacher. As I was telling Senator Farr, the child has a very serious disorder, she's in a wheel chair and unable to move, and of her own initiative she's been watching these Spanish lessons for the past two years. The teacher told me that out of a possible score of ninety points on this final test that we give the boys and girls after two years of television Spanish (it's a comprehension test), she received a total score of 87. This teacher visits her periodically and she also told me that most of her little tests that she takes, that I give over television, she receives a score of 100. It's interesting to me that this child, on her own, perhaps is not going to speak Spanish fluently after two years, but has learned to understand it and it has also given her something to look forward to on Monday, Wednesday, and Friday. She's unable to move, she can only watch the television. Her mother says that she just wishes she could bless everyone who had anything to do with educational television in Southern California, because it gives her child a reason for living, and I think it's a real exciting letter from Mrs. Virginia Comstock, a home teacher from the Tuscan Elementary School District, of a young lady named Elizabeth Akonsky from Santa Ana.

We also receive many letters from other parents who have the same problems with their boys and girls who are bedridden. We also receive letters from teachers and from children who say, "I really love Spanish and someday I hope I will be our Ambassador and visit South America. After two years of Spanish via television, I think I can speak it." Now perhaps he just thinks he can speak this, but if a ten-year-old thinks he can, he can do it pretty well. And think what kind of a future he has in foreign languages, when at the sixth grade he thinks he can speak it and he has the opportunity

in the seventh, eighth, ninth, tenth, eleventh and twelfth to really do more of it.

FARR I wonder if you would describe for us, you did two years ago very ably at UCLA, but I think it would be good to get it into the record, if you would describe just how you go about it. I understand you teach a certain number of days and you visit classes a certain number of days. Could you just describe your method.

MILLER Yes. Well now, this, for the past two years, we have two programs now, by the way, Senator. This is since the last time we spoke. Our first level program, and I aim it at the fifth grade because in Pasadena we were starting our language program at the fifth grade, but we find boys and girls fourth, fifth and sixth using it equally as well and satisfactorily at this first level. We have a first level program on Monday, Wednesday and Friday for fifteen minutes; then we have a second level program, two half-hour programs, one on Tuesday and one on Thursday. I taped the programs a year in advance, so every year I'm taping one series or doing it live, depending on the situation at the studio.

FARR Is this video tape?

MILLER I'm video taping one series. We did the first series and then we did the second, and we said, "We can improve that first series," so we went back and re-did the first year series. We keep learning more and more about it and how we can improve upon it all the time. Then, besides making these tapes which are broadcast over Channel 13 in Southern California, I also feel it's imperative for the television teacher to visit the classroom, because here you can see the children's reactions to the actual lesson.

FARR Are you sometimes in the class while your image is coming over the screen?

MILLER Yes. I am many times in the classroom when the children are watching the program. At first I would walk in before the program and I would tell them that I was going to be there, and I found that the fourth and fifth graders, and third graders, it was really miraculous. They didn't know whether to look at me or to look at the television screen; they would look back and forth and they would say "Buenas dias," or "Buenos tardes," into the television set and look at me and giggle because here I was in the back of the room. So this past year what I've done is, after the television program has started I came in very quietly and sat in the back and watched their reaction.

FARR And give them a greater jolt.

MILLER Yes, at the end of the program it does. But I find in order to evaluate the program, it's best to do it this way, because I can get a more normal reaction out of the children. And it's always interesting to me to see the children react to the fact that the television teacher is really there in the room. And if I say, "Guillermo, I'm so happy you're sitting up tall today," (you know that "Guillermo" is "William" and of course our children have chosen Spanish names, and there is always at least one "Guillermo" in the room) so he sits up doubly straight. And if I say, "Juan, you're not listening quite as well as you should, and many times I'll hit upon a "Juan" and I'll get a letter

about it, too. "How did you know that I was not quite listening at that time?" It's amazing to me that, one of the little girls the other day when I was reading in one of the classrooms, I was talking about the different clothing that you wear and I said, "Oh, Maria, you have a lovely white blouse and red skirt on." And Maria had, in this one classroom, at Willard School in Pasadena, a white blouse and a red skirt, and this was just a guess part, but I think after you've taught children for many years in the classroom, you know that out of thousands of classrooms there are bound to be some children who wear white blouses and red skirts. And Maria said, "Muchas gracias," and everybody clapped and everybody was very excited about the fact that Maria felt that I was really telling her how lovely she looked that day. In many instances like this, many times when I say something and the child doesn' agree with me and he just shakes his hand at me and says, "Oh, I don't think you're quite right." It's amazing.

One thing that television can do that the live classroom teacher cannot do (there are a few other things, but this one especially), when I look at a group I can only have eye contact with one of you. For example, Senator Farr, if I'm talking to you I'm looking directly at you. When you turn on the monitor, if you have learned through experience to look very straight and direct at this lense, you look into no-man's land, at every single child in the classroom and they think you are looking directly at them, because they have eye-contact with that one person on the monitor. And in language teaching this is imperative, because if I think it's important for them to realize a difficult word in Spanish, every single child can have a front row seat to this instruction, and in the first level it's imperative. If we're going to teach them correct pronunciation and intonation, get them to really feel the language, if we wait until they get into junior high school and high school they can't do it, it's just impossible. If we make it with one out of twenty it is rare; but at the elementary level we can get the majority of the boys and girls to really feel like they are Spanish-speaking, because you don't only speak Spanish by opening your mouth, you speak it with your hands and with your eyes and with your body movement, and they can get this front row seat in instructional television. The children actually feel, I think, that the television teacher is in the classroom with them.

I paint a beautiful picture of instructional television; of course I'm enthusiastic about it because I have visited so many classrooms and I've seen the results that we have been able to attain, and I have also taught in the elementary level before we had one with instruction at the elementary level, and have done projects with boys and girls at this level, and have seen their enthusiasm for a second language. I must emphasize, however, that it's imperative that the administrators of a district and of the teachers using the program really and truly believe, and feel strongly and back it up. Children are just human beings, and if the teacher is not enthusiastic about it, many of them aren't as enthusiastic about it as the teachers. And many of them convert the teacher as she becomes more secure with it. But it is important. And that's why I think this legislation is so wonderful. Sometimes it takes a strong shot in the arm to get us all going, and if we don't move now, who's to

say we're not ever going to move, and I would say we are cheating boys and girls. I would like to see seven-year-old in the program, and I hope to have someday a third one in school, and he could either start now or reach his level to start.

FARR Let me ask you a question. We passed the Senate Bill 57 which is commonly referred to as the Fisher Bill. There's a provision there for the exceptional scholar. We have people now who can't teach in the public school system because they don't have the credentials. Do you think in the field of language training, particularly in the field of educational television, that we can use some of these people. I think, for example, in the Army Language School at the Presidio of Monterey, we have people who teach languages there but they haven't got any degree in this country and they haven't got the credentials. Do you think in the field of

MILLER That this might be a possibility? It may be a possibility, but may I just point this out: that it is imperative that the person that is teaching a language not only know the language, know its analysis, etc., but also know the age group that he or she is working with. It is much easier to take an adult class of people who already have signed up, or say at the Monterey Army Language School, they are motivated strongly before they go there to learn that language. In adults the motivation is different. Now with children it's going to take a skilled person who understands children to get them interested in the language. I feel that these people that are gifted by nature, and can do this but I think it would be important that we look at them very carefully. May I give you an example: I serve as a consultant to the Department of Elementary School Principals in Detroit, and I had someone come up to me and say, "Mrs. Miller, there's something wrong with my program, perhaps you can diagnose it," and I say, "Well, tell me about it and perhaps I can help you." He said, "I am teaching Russian, and I have a teacher in my school district teaching Russian to first-graders for one hour every day." I said, "Well, right away I think one thing that's wrong is that you are teaching them for too long a period, and you wouldn't want to give those first-graders anything for one hour and foreign language isn't that different from any other subject matter area." Another thing I said was, "What kind of a person is he? Does he understand children? Has he ever worked with children?" The answer was, "No." He was teaching Russian the way you perhaps would to an adult group from an analytical point of view. So this would be my only concern with these people. If they understand the methodology on the children, then of course they are God-given. Of course, these people can learn because they do have this language, and they can cooperatively work with the school district.

YELVINGTON Senator, on reflection I think that for a large part the requirement in the Casey Bill that foreign language instruction be instituted by '65, can be linked to Mrs. Miller's feat because the Citizen's Advisory Committee and this Committee were convinced by their studies that foreign language instruction and the creation of a bi-lingual population was imperative. I think that you became convinced of that when you held your hearing at the Monterey Language School. But it was Mrs. Miller's presentation at UCLA two years ago that convinced you and other members of the Senate Committee that

it could be done. Had that not taken place, very possible that portion of the Casey Bill would not have gotten through the State Senate.

FARR That's very true. I want to say that one member of our committee who was not at all impressed with the possibilities of educational television until he heard your testimony, came back to Sacramento in the face of your presentation and was one of the strongest advocates.

You are going on this new program?

MILLER Yes. Dr. Jenkins and the Pasadena City School officials and the School Board have given their blessing because we feel that it is our responsibility as educators to give our children the best program possible, and we feel that perhaps with the cooperation of the Modern Language Project and Heath de Rochemont, and their financial aid, and also their experience, combined with ours, is going to, we hope, give our boys and girls a better program.

FARR Will you film some of these things within Latin-American countries? Is that the idea?

MILLER Yes. We've been talking about the first year perhaps doing the background in Mexico and perhaps in Spain, but of course Mexico is the natural place because they are our closest neighbors, and we hope our children will understand the culture of our closest neighbors, first and foremost. And we will go on from there to try and incorporate the various Latin-American cultures.

FARR Will some of these programs be available for production on television too?

MILLER Yes. They will all be on film and they can be used. Of course the films will be in black-and-white and in color, and the black-and-white will be done (correct me if I am wrong, Mr. Mace) in such a way that they will be able to be used on television and very well, just as the French program, Parlons Francais is being used in many of the states at present. It's a filmed series, and it will be on 16 mm and 8 mm, because we also are looking to the school districts who perhaps have the problem of having no television station or channel available for hook-up right away, so that perhaps in these small districts with one or two elementary schools, they may use our filmed work to help them with their elementary program.

We strongly feel that we either start now and do this for children, because we believe it's the best thing for boys and girls, or we just will never do it. By cooperating with the Heath de Rochemont and the Pasadena City Schools and also Los Angeles County Schools, we hope to do this for our boys and girls.

FARR Thank you very, very much, Mrs. Miller.

MILLER You're very welcome.

FARR Any further questions? I hope that we could get the identification, maybe at the conclusion of the hearing, of your program up there.

MILLER Well, may I say that this is the first program, and we'd be most happy, I'm sure, for you to see the film, and we also have some films available of our tapes, and we'd be most happy to lend the Committee one or two of the films.

FARR Possibly we might be able to see that tomorrow at the Anaheim School.

YELVINGTON That would be very wonderful. However, we'll probably wind up here a little after five and we wouldn't be able to get back down town anyway because of the freeway traffic.

MILLER We can make some of these films available to the Committee if you so wish, and the materials and study guides. And we have talked about our tests, and the research findings show that we have tested our boys and girls in the area of comprehension thoroughly the past two years and we have those available. We would be glad to incorporate all of that in our final report to you.

FARR Thank you.

YELVINGTON We wish you all the good fortune in the world. You have already made a good contribution in foreign language instruction, and you will be able to do more now.

FARR Mr. Fink, I think you probably follow this up now.

ALLAN W. FINK, COORDINATOR OF LEARNING MATERIALS, PASADENA CITY SCHOOLS

Senator Farr, Senator Stiern, Mr. Yelvington, my name is Allan Fink and I'm the Coordinator of Learning Materials for the Pasadena City Schools. I have just a very brief statement to make, aimed primarily at paragraph two of Mr. Yelvington's letter to Eleanor Richardson concerning the feasibility of using instructional television to meet the State requirements. My comments are also really intended to be introductory and supplementary to those made by Yvette Miller, and in essence is somewhat the formal position of the Pasaden City Schools.

I respectfully request that the following information be considered in evaluating the feasibility of teaching Spanish by television and the adequacy of the program in relation to the State foreign language requirement for the elementary schools: (and I have nine points that I would like to make)

1. Our need for foreign language instruction in the elementary schools of Pasadena preceded State Legislation in this area. All methods of instruction were investigated with the result that instruction by television proved to be the only satisfactory method which could be financed by our district.

2. Many other districts faced with the necessity of instigating programs of instruction in foreign language arrived at the same conclusion. From the beginning there has been strong and extensive support for the program developed by the Pasadena City Schools.

I would like to explain the fundamental differences in an insert here, between our program and many of the programs in the State and in the Nation. Our program is a fundamental part of our instructional day and is required instruction for all fifth and sixth grade children, and it is not something that you look at one day, on an optional basis.

3. After a careful study of the costs involved, Pasadena found that it would be possible and less costly to assume the responsibility of producing the two-year Spanish television programs - Aventura Espanola and Segunda Aventura Espanola - than to employ teachers to teach

classes directly.

4. By contributing these programs to the Regional Television Group they became available to all school districts in Southern California, and in return, the means of transmitting the programs to the Pasadena City Schools became available. The cost of the Spanish programs to the participating districts is very nominal, since the present 30¢ per ADA has covered not only all costs of the Spanish programs (including extensive teacher guides, pupil workbooks, and tests) but all other Guidepost programs as well. For instance, an elementary district with an ADA of 1,000 students would pay only a fraction of $300 for the Spanish lessons for all of the 5th and 6th grade students in that school district.

5. Although the initial costs of producing the Spanish programs was relatively high, many of the expenses are not of an annually repeating nature, so our production costs are decreasing materially.

6. Objective evidence is accumulating to give substantial support to the belief that the initial instruction of a foreign language can be done successfully by television. Members of the Los Angeles City, Los Angeles County, and Pasadena City School research staffs were heavily involved in preparing all tests and evaluative instruments used in the Spanish programs. The results of these tests have been consistently favorable. Reports on the test results are available from the Research Office of the Los Angeles County Schools.

In fact Dr. Haas of the Research Department actually conducted and drew the conclusions of the test and so they were not done by an interested party inside of the Pasadena City Schools.

7. There has been a consistent and determined effort on the part of the Pasadena City Schools' staff to develop to the best of its ability a superior program, including effective audio-visual aids and other supporting materials.

8. The unique and unusual capabilities of the creator and teacher of the Spanish programs have contributed materially to the success of the program.

9. With the exception of the one major problem of the conflicting interests of commercial television and educational necessities with respect to television time, no reason appears which would indicate that it would not be feasible to materially extend the use of television to accomplish the State requirements for foreign language in the elementary schools.

I will just conclude by saying that, although I don't have the guides and other materials here, we're most happy to furnish any of these materials the committee would like to have.

Thank you very much for this opportunity.

FARR Mr. Warren White of the Encyclopaedia Britannica? Would you identify yourself for the record, Mr. White?

WARREN WHITE, DISTRICT MANAGER, ENCYCLOPAEDIA BRITANNICA FILMS INC.

I am Warren White, District Manager for Encyclopaedia Britannica Films.

Mr. Chairman, for my company and myself I wish to thank you for the opportunity to appear here to discuss briefly issues of importance to all of us - especially to the students of our schools. I'm going to edit here and

FARR I'd appreciate it if you would more or less summarize it because of the time factor.

WHITE I'll speak a little bit about our Harvey White Physics series. WQED, the educational station in Pittsburg, Pennsylvania, realized a great need existed to assist the Physics teachers in public and parochial schools in the upgrading of their course content. They realized that no high school could afford all the equipment really needed to adequately teach modern physics, and noted that many teachers were not acquainted fully with such areas as Atomic Physics, Nuclear Physics, and Quantum Optics. The decision was made to find the finest teacher available, a teacher's teacher, to conduct a modern physics course on TV every day. This teacher would have a very liberal budget and be free of any other responsibility for the whole school year.

After soliciting the advice of several professional science organizations, a decision was made to obtain, if possible, the services of one of the leading Physics professors in the United States, Dr. Harvey White, Professor of Physics at the University of California at Berkeley. He had written well-accepted text books and was widely acclaimed as a master teacher.

The University agreed to give Dr. White a leave of absence for one year. He started 3 months ahead of the first telecast to prepare for the total program. The University of Pittsburg assigned four graduate physics students as Dr. White's assistants. Preparation was so concentrated and elaborate that approximately fourteen hours each day were spent during the complete school year to prepare for one twenty-eight minute lesson.

E. B. Films realized that here was a tremendous effort to bring team teaching to the classroom, bring the finest in demonstration equipment and truly upgrade the teaching of physics; but unfortunately, unless recorded, all this excellent dedicated effort would vanish in air. Subsequently our company teamed with WQED to record on 16mm sound-color film, every lesson (162 in all) during the complete school year.

The end result was a course better than the original TV course. Why was it better? The films were made in color but for those customers who wished the scenes in more economical black-and-white, we added color films where such were judged essential to the learning process. Sometimes experiments didn't work on TV - these were reshot. Sometimes Dr. White unconsciously made a few mistakes, slips of the tongue - all these were redone. If a new concept developed after filming, it was added.

With the films, our company could offer the same opportunity and more to any high school in America that the students in the Pittsburg High School had been given.

Dr. White has written a complete text and work book that correlates completely with the film course.

You will note an attached brochure - Excuse me, I didn't bring the attached brochure - it refers

to it in here. This is the Rocky Mountain Project, which has been using the Harvey White Chemistry Series.

FARR Excuse me. Were you speaking of Dr. Harvey White, whose program was done on Continental Classroom, I believe? Who paid for that? Who sponsored that?

WHITE Well, I'm not sure who paid for the Continental Classroom. Originally this television series was sponsored jointly by the Ford Foundation and we were the commercial interest in it. Since that time, through our distribution of the materials on film, we have paid back the Ford Foundation, and those rights for the films now belong to us.

Why am I telling you in detail about this project? To try to illustrate the importance of utilizing communicators, large budgets and outstanding human resources to do a more effective job of upgrading education. Local funds are limited. Local talent in some cases is limited. Local producers' techniques are not always professional. Local teachers can not spend fourteen hours a day with four assistants preparing for one thirty-minute class. Local resources are limited in correlating all resource materials so that all phases of instruction relate. Any time another communication media does nothing except compete with the teacher for class time and perpetuates the normal, it is not worth the millions of dollars to be spent to bring it to the classroom. It must lead, upgrade, and to a degree be a vehicle for teacher in service training - all at the same time.

May I also briefly mention another example of material which we believe is of special value in instructional television.

After the success of the Harvey White Physics course, our company was approached by the American Chemical Society and in essence said they had been wanting to do something similar in chemistry. They agreed to assign the finest researchers, educators, and industrial leaders to our production crew. Dr. John Baxter, a noted teacher, was chosen as the teacher on film and production was initiated. After about 2 years, the entire course was completed, embracing all the modern concepts of chemistry and using all the techniques of film production.

It is interesting to note that both Dr. White and Dr. Baxter were asked to teach teachers how to teach chemistry and physics over the famous NBC Continental Classroom nation-wide. Again, reinforcing the fact that preparation, time to prepare, talent, money, and production know-how are essential to fully realize the impact of the medium.

The teaching of foreign language by means of television carries, we feel some additional implications.

The skill of learning to speak a foreign language is indeed complex. According to most foreign language teachers, the acquiring of this skill requires drill, reinforcement, repetition, re-entry and comprehension. It has also been ably pointed out that each class, and indeed each student, learns this skill with varying degrees of aptitude. Thus the more flexible a tool becomes, the more important it is to the subject taught. Material in the hands of the teacher can be applied by her accor-

ding to the dictates of the combined or individual abilities of the class.

Much material is available today and rather inexpensive (from $75-$150) that assist the teacher to teach a foreign language even though her background has not included training in the subject. In most instances, a very good teacher's manual is included with appropriate records and film strips. As in TV, she learns along with the class but with the advantage of using the material according to the learning speed of the class. Also, the cost of acquiring the materials is a one-time expenditure and will last for years. Incidentally, these materials have proven very effective. We would commend the study of these materials to the Committee.

Thank you again for the opportunity to appear before you. If you have any questions, I'll try to answer them.

FARR Any questions Senator Stiern?

STIERN No questions.

FARR Mr. Yelvington?

YELVINGTON Just one note. You do have an exhibit in the back of the room, do you not?

WHITE No, we did not bring any exhibit material. We have materials for French similar to the Heath de Rochemont, but we are not primarily in the field of television and we didn't feel it was appropriate.

YELVINGTON Well, television is not going to be able to reach every area of this state by 1965. Are your materials such that can be used by film projectors, is that it?

WHITE This is our original and primary business, production of 16mm motion picture films.

YELVINGTON Well, we would be interested in samples.

WHITE I'd like very much to make it available to you.

YELVINGTON Do you know the address of the committee? Could you make available some sample film? Not any complete series, but we'd like to review them.

WHITE I will.

YELVINGTON Thank you, sir.

FARR Thank you very much Mr. White. Mr. Robert C. Gerletti, Director of Audio-Visual Education, Los Angeles County Schools.

ROBERT C. GERLETTI, DIRECTOR, DIVISION OF AUDIO-VISUAL EDUCATION, LOS ANGELES COUNTY SCHOOLS

My name is Robert Gerletti, and I am Director of the Division of Audio-Visual Education for the Los Angeles County Superintendent of Schools. As you know, the Los Angeles County Superintendent of Schools Office is the operating agency for the regional educational television project of which the Spanish series is a part. These remarks should perhaps precede Allan Fink's and Yvette Miller's. I will read excerpts of what I have here.

We were asked to testify and give a status report of where we've been since the report we gave to you two years ago. During 1960-61, fifty-eight districts participated, and at that time we had

four counties represented. The cost to the counties at that time was 20¢ per unit of ADA. We produced lessons in English, Spanish, Science, Music, Art, Current Issues and Social Studies, and we've appended a schedule for your benefit at the end of this report.

During 1961-62, the current school year, we had seventy-one school districts participating, and six counties. We had an ADA rate of 30¢, which was a raise of 10¢ over the past year. We produced the Spanish, Science, Language and Social Studies materials. The secondary Science series was repeated on Saturdays with public service time and we have appended the schedule for your use.

We also have indicated to you the number of programs which we produced this current year, 315, and on page three we've listed some indication of the numbers of copies of materials, and I think Jim Day referred to something like a million sheets of paper and we were well over that also. One thing we would like to call your attention to - 42,000 copies of pupil workbooks for the first level of Spanish were distributed. We had, in Los Angeles County outside of the city, over 42,000 boys and girls watching regularly the Spanish program.

We have also produced in-service training programs for teachers, and the demand for this particular kind of service continues to increase. We will be on the air with considerably more and the expanded program in the area of in-service education. Listed there are the ones we used this particular year.

For 1962-63, we have indications at the present time that sixty-six school districts and seven counties, expanded here for the next school year, one additional county. The rate we have set for this current year is 50¢. We had to do that, as the districts wanted more programs then we could provide at 30¢. We will produce lessons in Spanish, Mathematics, - and the Mathematics programs will be video tapes which we will purchase from KQED. It will be a saving to our organization of some $16,000 over what it would cost us to produce our own. America's Heritage, National Goals and Social Studies and again we have appended this schedule.

We will produce five in-service programs on Spanish, and six in-service programs on Mathematics which we presented to help the teachers along with that program. We are also undertaking a study of feasibility and value of presenting a third year of Spanish over television, and this study will be going on during 1962-63.

We've estimated the costs for you for our programs for 1962-63 to be about $115,342. This includes, as you can see, twelve items. One of the large ones is station time, which is purchased time from KCOP.

We handle most of our instruction through video taping. We try to do this at least three weeks ahead of the telecast date. We do this also to allow for correction of errors, possible illness of the teacher, to prepare study guides in advance, we get consistently better production, this is much better for our commercial station, and for possible repeats. We also, as we indicated before, repeat programs at different hours to allow for differences in schedule. We have tremendous numbers of sche-

duling problems in the areas that we serve.

The potential audience in this area is somewhere in the neighborhood of two million children and if we could spread the cost over that large a basis, the cost would be considerably less than 50¢.

A further advantage in video taping, is that the teacher, as I think Mrs. Miller indicated, can visit the classrooms which are using the telecast. This creates a friendly relationship between the television teacher, the classroom teacher and the students. Video tapes give the immediacy, or the effective immediacy of reality. We do not use kinescopes, as they are not as good quality as films or as the video tapes.

We have made an assessment to get the reactions of students and teachers. We've distributed reaction sheets which we use in several ways, one of which is to upgrade the programs we put on the air. As both Mrs. Miller and Allan Fink have indicated, we have conducted a formal program of assessing the effects of educational television programs in Spanish. This was done in cooperation with the Pasadena and Los Angeles City Schools. The assessments were consistent; we did two of them and the third one is just being completed. The first two were completely consistent one way or the other. We had eleven thousand cases in the first study; we had four thousand cases in the second study. At the present time we have just completed giving the test to forty-two thousand students in first-year Spanish, and over twenty thousand students in the second-year Spanish. These results are being tabulated and we can furnish them to the Committee after July 1, if you so desire.

We are also asked to comment on the implications of using television in remote areas of the state, and we have five items listed. We feel that television can provide competent instruction in subject matter areas not now available. It also provides resource people who are not readily available, up-to-date information, in-service training programs and very-well-prepared presentations. I might add that we also have a committee in this area on which are represented the major educational organizations, and we try to coordinate all of the television activities so that we can supplement one another's programs. This is public, private and parochial schools.

Other pertinent statements: We feel that we need additional funds which are not now available, as many of the school districts would join our program, but bond issues are not succeeding, and they do not have funds. Production facilities are needed by public schools, as commercial stations are not able to provide the necessary time and space nor will they in the future. The station with which we are working has shown a significant deficit, and this is being reflected on the way that they are curtailing some of the time that we have on the air for next year. We feel we should have access to VHF, as VHF in this area is not completely satisfactory and most of the television receivers, and we've purchased over thirteen hundred, are not capable at the present time of receiving UHF unless they are converted. Necessary facilities for installation of television in schools should be provided for in the construction of new buildings

Thank you very much Mr. Gerletti. Any questions?

Senator Stiern? Mr. Yelvington? I appreciate your being here.

I'd like to read into the record a wire just arrived, addressed to the Committee saying: Respectfully request inclusion in minutes of meeting information relative to efforts of Committee for Educational Television for Educational Television Incorporated, Los Angeles, California Non Profit Organization formed January 1961 to stimulate comments to FCC on acquisition local unit in Los Angeles. This committee has worked diligently since September 1960 to provide community with inspiration for station operational plan.

Comments and budget has been filed with FCC and acknowledged and committee files show more than 75 industrial firms indicate willingness to support project and more than 30 civic and community organizations. Current auction of KQED in San Francisco indicates impact of one station on community and with proper community and business backing Los Angeles could have leading educational television station in the United States. It is the intent of this committee to pull together these many elements to present a united front to obtain much needed station. Respectfully submitted.

Georgia Marcher, Secretary Educational Television, Inc.

That will be filed and I know that members of the committee as well as everybody here is very pleased to hear that, of the efforts being made to get an educational television station in Los Angeles.

Is there anyone else here that wanted to be heard?

YELVINGTON Dr. Bruce Miller, Senator. He's on the agenda and is in the back of the room.

FARR Dr. Miller, come forward please.

BRUCE MILLER, SUPERINTENDENT OF SCHOOLS, RIVERSIDE, CALIFORNIA

Gentlemen, I am Bruce Miller, Superintendent of Schools for Riverside, California, and I was asked to come here to discuss with you, really from an informational point of view, the Continental Classroom Learning Resources Institute, College of the Air and Midwest Airborne Television. In the interest of time, probably you will forgive me if I cut this down greatly. I am not prepared to, while I have this all in manuscript form, due to the fact that I will cut down my oral presentation I will be very happy to send you a written copy of my statement.

FARR Fine.' We'd appreciate that.

YELVINGTON We'll need that, Doctor.

MILLER Actually I happen to be serving on the Board of Directors of Learning Resources Institute, which as you will see subsequently, is closely aligned with Midwest Airborne Television, and so I'll be very happy to give some statements purely on an informational basis, which will help all of us to understand what is a tremendous impact we hope the College of the Air and Midwest is making throughout the midwest, and of course on a national basis.

I was extremely pleased to follow Mrs. Yvette Miller. I can't help but note that because of her artistry and the fact that Riverside City Schools participate in the southern California movement,

it strengthens the thesis which I am about to give here. The artistry and the high quality which is being performed today over television. Of course I'm always distressed to follow a tough person such as she is, and others who have given testimony here this afternoon.

Well, actually, Midwest Airborne Television Instruction had four purposes which we will scan very briefly: (1) to broaden the range of educational offerings available to many schools, (2) to increase the quality of offerings in schools and colleges where actually resources are unavailable or inadequate at the present time, (3) to do these things at a cost that was less than that for a comparable increase in quality achieved by other means, (4) then the fourth point is simply the fact that it was in a way, a planting of a seed, and while it was largely financed by private means and foundations, which in answer to your question, I'd be happy to give it just a few minutes.

It was never intended to be continually financed by private means. It was to have been done in such a way that it would be, in some way, a self-supporting, maintaining program. May I say parenthetically that this is the case, and very, very shortly some of those large foundation funds will be withdrawn and Midwest will be by itself. The program actually was launched in the spring of 1960, and we'll skip a great deal on the history of the program. As you can well understand there was an extremely felt need in this area, and the idea of course was the fact that an educational television station, an ITV station a few miles above the earth - this is a fascinating project in itself - and the geographical coverage would be greatly expanded, and this would enable a vast majority of our school youngsters in the west and midwest area to enjoy the advantage of this, far beyond the telecasting limits of ground-based ETV stations. This was to be done in the small areas, small rural communities in Indiana, Ohio, Illinois and this central area. You can readily understand that on the ground, or in the air, a single open circuit channel faces difficulties in attempting to serve a significant portion of the whole curriculum, or the great spectrum, as we say. You can readily understand that a typical twelve-grade school system offers from 100-175 separate courses, and some of these are divided into differentiated sections, actually, according to student ability. A single television channel can provide only twelve half-hour units of instruction in a six-hour school day. That's enough only for a half hour per day at each grade level. You can readily understand the sparity between broadcasting potential and size of curriculum is even greater at the college level. As a result of this sparity, it was felt that a ground-based closed-circuit system with six simultaneous channels can overcome this limitation, but of course the cost would prohibit it, and the students to be served in the classroom which are widely dispersed geographically.

So what to do about this? Naturally the thing to do would be for the Airborne to go up in the air because of the geographic areas. So it was conceived that this project would take two DC-6 AB airplanes and equip them in such a way that this could have a continual flight around. In other words by economically expanding the reach and the variety of instructional television, the Airborne Television System holds promise, we think, of making a substantial contribution toward the improvement

of the quality of American education.

In a three-year experiment soon after World War II, the Westinghouse Electric Corporation developed and demonstrated the technical feasibility of this idea. Telecasting by delivering a satisfactory signal from an airborne transmitter, operating at 25,000 feet to receiver sets as far away as 225 miles. Now we feel that recent engineering studies, drawing on the technical findings of the Westinghouse Stratovision experiments, laid the basis for this program, and to overcome the difficulties of two channels, and the expansion into the six-channel unit simultaneously broadcast telecast from one aircraft. This is already being made available at a very relatively low cost, and a very high quality faculty, and a broad, rich curriculum. And so at the present time, within a radius of 200 miles of north-central Indiana, as I have said before, there are more than five million students in 13,000 separate locations; about a third of these are in school systems of less than 2,000 pupils, which for the most part are too small to provide a satisfactory education under similar conditions.

In skipping again, you can see that by getting the very top in instructors to teach these courses you can see the wide impact covering these very small rural areas; you can see what a tremendous impact this would have.

Well actually, the greatest, most challenging problem faced was the staffing and, of the teachers themselves. We won't go into detail about this, but will tonight remember a few years ago when we sent out requests all over the country to eminent people, some in this audience, I'm sure, this afternoon, to recommend people who had not only experience in telecasting, but who were highly qualified; not only those who knew the subject matter themselves but, as Mrs. Miller stated, were able to teach this, were able to get their personalities and the message across to boys and girls. We began by receiving nominations of over 900 - I think almost a thousand of these nominations came into our center, and out of this was a further screening down to several hundred, and then it came down to, I think 50 or 60 and these were invited to the campus of Purdue University to participate in courses of instruction, and a further screening was made to approximately, I believe (my figures are not accurate because they are out of my head at the present time) less than a dozen of these teachers - from almost a thousand down to the very cream of the crop. Out of this, you see, the program was initiated.

The great lesson to be gained from this, I think, from a California standpoint, is the fact that these are videotaped, and we have received these catalogues which will be given to you of courses being taught and already being taped. We have regional telecasts, and we hope to go into Singing, Listening, Doing, Learning Our Language, the Science Corner, all done by eminently qualified people.

FARR Dr. Miller, videotape, as I understand it, is a tape that has to be projected on a television projector rather than on a movie camera, is that correct?

MILLER That is correct.

FARR I guess there are quite a few television stations that can't use videotape, is that right? Some of the smaller stations?

MILLER Well, I'm not a technician, but that is my understanding; I think that is correct.

Let's skip over, then, because of the time, into Learning Resources and here again I will go through this very briefly. When I saw my time was running out, I quickly went through my materials and found a summary of Learning Resources which I will further reduce from the files here.

Learning Resources actually had its beginning against the background of the growing concern during the Fifties with the adequacy of our high school curriculum. Science courses in particular were lagging far behind the many startling and revolutionary discoveries that had been made since the war. This situation was brought to a head with the appearance of the Russian Sputnik in the fall of 1957. With that impetus the American Association of Colleges for Teacher Education, already concerned with the problem, decided that the time was ripe to do something. Their problem was this: How to bring these new science findings to teachers throughout the country quickly so the teachers could in turn pass them on to their students. Only a nationwide effort with an entirely new approach could meet such a tremendous challenge, and here again, summing very rapidly, and we will give the complete history to you, Learning Resources was initiated.

Now, actually the membership, (and I came in at a very early date), it had already been recognized that Learning Resources Institute, to do this job, not only had to have a Board of Directors fairly representative across the nation from large schools, small schools, Commissioners of Education and this type of approach, but it also had to have on its membership what are known as constituent member agencies. It would be foolhardy for public schools alone to come into this, so we had to include the American Association of Landgrant Colleges and State Universities, the American Association of School Administrators, the Association of American Colleges, the Council of Chief State School Officers, the Department of Audio-Visual Instruction of NEA, the Joint Council of Educational Broadcasting, and these kinds of constituent people. We have tried, first of all, to bring representative groups together for the purpose of disseminating ideas, flowing to and from our constituent members of our respective associations of which we represent.

As was stated here just a few minutes ago, after much hard work, Atomic Age Physics taught by Dr. Harvey White of the University of California at Berkeley, went on the air October 6, 1958, and that was the first Continental Classroom voice over the NBC network. Plans were immediately begun, this was very successful, for the production of next year's course which was decided to be Modern Chemistry. Many of you will remember that Dr. John Baxter of the University of Florida taught this. The third Continental Classroom course, the first to be produced wholly by Learning Resources Institute, was Contemporary Mathematics, and this took a different aspect because here, for the first time, not only subject matter was produced, but a way to teach subject matter. So we had Dr. John Kelley, again the University of California, teach the actual course in Probability and Statistics, but we had concurrently with this, Dr. Julius Lavity of the famous DeWitt Clinton High School, give a methods course along with this, to teachers, and this proved highly successful. Many districts throughout America

not only used this course as subject matter course, but it also used it to show teachers how to produce a higher quality of work in their various classrooms. Our System, Riverside City Schools, happened to be one of the first Systems, naturally through our interest, giving in-service training, in giving in-service credit in this type of connection. But later on, we became involved - now all of this was going on in the morning and you had to get up at six o'clock if you wanted to see some of these programs and not too many were taking advantage of this. Happily, for the record, I did get up occasionally and see the program myself from 6:00-6:30, 6:30-7:00, this sort of thing. But this became quite a problem, and so how to get this on time which was much more convenient throughout the country. And so another involvement came about ARI announced in May of 1961, the next course would be done in connection with CBS television, and this move was made in order to take advantage of CBS's offer of flexible time scheduling. This meant again that local stations would be free now to carry the program at times of their own choosing rather than having to telecast them at an hour selected by the network. And so the Continental Classroom courses, which had originally been given early, now faced the fact that over CBS Television Network, we would begin a new series now called College of the Air and it would be seen at times most convenient for each station in terms of its own local audience.

FARR Excuse me, Dr. Miller. How do you, what do they do - retape it? Videotape it in the studio?

MILLER That's right.

Now, last fall the new Biology was originated. Through our surveys we discovered that some of these courses were given at 5:30 in the morning and as late as 11:00 in the evening, and this sort of thing.

The most exciting thing, in closing, (and then I want to just evaluate very briefly) is the fact that we now have made another forward step in going in and teaching for the first time, a highly controversial subject - that of course is American Economy. You just wouldn't believe the amount of background work and discussions which had to take place, because here we had, in a highly controversial subject in the American Economy, two large agencies. We had the agency and the philosophy of economics as seen from a college professor's standpoint, and we had the Association representing American Industry and Business. And each sect wanted this course to be taught this way, and this group over here said that the course was to be taught this way, so what to do about it? Well, quite naturally we had to get some support, we had to get some dollars and cents out of this thing, and so an idea was reached that we would have what is known as a task force, and this is the famous Economic Task Force, and I wish I had time this afternoon to tell about it. Both groups are confident in this so-called Economic Task Force and it is this agency which completely, totally, has arranged this wonderful new course which is going to be taught by Dr. John R. Coleman of the Carnegie Institute of Technology, and we are greatly looking forward to this.

We must remember, and I would like the Senators to remember, that Learning Resources role is essentially that of a service agency. It provides the educational content in a field where there is a rec-

ognized national need and tries to insure that this content is of the highest quality possible. This is done first of all by seeking co-sponsorship of the leading professional organizations in the field. For example, the American Institute of Biological Sciences is co-sponsoring the current course of biology, and as I said before, the American Economic Association in joint council with economic education will underwrite next year's course. Furthermore, we also seek the advice of the leading educators and specialists in the field, both in selecting the national teacher and developing the course.

Just in closing may I, as a school man, as a Superintendent of Schools, state this as to how all this affects California's educational television. We believe in our area that there is no question of the importance of educational television, the technique in furthering the quality of education. This has been evidenced by teacher performance and course content, not only in airborne, not only in the College of the Air, but primarily we know in our own Southern California Council, we're extremely proud of the wonderful work which has been done here in Southern California. The participation - we're doing everything possible to develop this, we recognize the fact that the people in our local areas are just beginning to recognize this, but they are gradually awakening and seeing the tremendous impact that instructional television has had on all our people. I was again pleased to hear Mrs. Miller speak of the role of the teacher in educational television. Many superintendents have actively participated, going to the rooms themselves and watching children react. But also watching teachers react, because it is through their insecurity - this is one of our big problems, to reach the teacher, to try to minimize the insecurity of this teacher because here we have possibly the very highest performer observing the course, and the classroom teacher in thinking of herself is apt to say, "I don't know, I'm a little bit worried about this. I'm a little bit worried about the questions which the kids are going to ask me," and this sort of thing. So we have to do a lot more to bring about a feeling here of more and more confidence in the course. I could talk a long time about evaluation. We were tremendously pleased in just having the results of our own evaluation of the Spanish program. We were thrille and I haven't even had an opportunity to send these to Pasadena to tell them definitely and concretely, what our boys and girls in Riverside, how high they have matched against the performance of a normal testing program. So you see with all this, with the enthusiasm which we have tried to engender, we know there's a tremendous place for educational television, as it is continuing to improve the quality of classroom teaching here in Southern California.

Thank you.

FARR Dr. Miller, I wonder if we might have a copy of the results of the tests.

MILLER I'd be very happy to send them to you.

FARR Any questions, Senator Stiern?

STIERN Another thought occurred to me, having heard the economic dissions by the consumer, the housewife, we have the college professor with his theories and we have the manufacturer, (inaudible) housewives.

FARR Would you furnish the committee with copies of those programs that you mentioned?

MILLER I'd be very happy to. Do I send them to the Committee office? I have to present a prepared statement so I'll send it to you.

YELVINGTON Senator, I have a question. Can you tell us now the results of your testing? How did your Spanis students compare with the national norm? Is the tabulation complete?

MILLER The tabulation for our second year people is complete. I'll be very happy to send you a copy. It was way up - 88-90-92-95%. We were tremendously pleased.

YELVINGTON Was this 88 and 90 percentile?

MILLER Yes. We were tremendously pleased.

FARR Are these the programs of Mrs. Miller's?

MILLER These are Mrs. Miller's programs. That's right.

YELVINGTON You mean 92-98 percentile?

MILLER I would like to send that information to you because we just...

YELVINGTON Well, it would be very pertinent data for the committee to have.

MILLER As a matter of fact, I haven't even reported it to my own Board of Education. I haven't had an opportunity; it just came in, just a couple of days ago.

YELVINGTON I have one more question. How extensively are the materials from the Learning Resources Institute and the western Airborne College of the Air, used in California?

MILLER We're not using them at all, other than the College of the Air.

YELVINGTON You are using the College of the Air.

MILLER Yes, anyone that wants to take a ...

YELVINGTON But not the other one.

MILLER No, not at the present time. The tape is, has only become available, I've only seen the announcement myself. I guess the others in the group have received this.

YELVINGTON It's too recent to actually be in wide use.

MILLER That is right.

YELVINGTON I see.

MILLER I would assume, for example we have a channel which has just opened up in San Bernardino-Riverside County, as you know. I would assume that this channel would start using this and will strive to promote something out there. I don't know about KCOP, but I would hope that undoubtedly, through our own Southern California Council, something will be initiated in the future on this.

YELVINGTON You do expect that these materials, as they become available, will be used extensively.

MILLER Well, I certainly hope so and I would expect - incidentally, in a conference only a few weeks ago in having regional representation there are other excellent programs down in Florida and the east coast, regional programs. And this is one of the beauties, you see, so that we can have a great interexchange of some of this material, where the very finest, the very best teaching is being done.

YELVINGTON I think I'd like to (inaudible)

FARR Who sponsored the program that Dr. Peter Overad did on American Government?

MILLER I have this here. Bell Telephone sponsored Physics, Chemistry and Math, Miller's was DuPont, Chemistry and Math. Ford Foundation - Physics, Chemistry and Math. General Foods fund - Physics, Chemistry and Math. IBM, Minnesota Mining and Manufacturing, I'll get down to it. Pittsburgh Plate Glass, RCA, Standard Oil, Union Carbohyde, U. S. Steel. I don't have it, but that was a pretty good series there.

FARR One more question. Mrs. Miller, are your video tapes going to be available in Northern California? Are they going to be used up there?

MILLER (Mrs. Yvette, in audience) - (Inaudible)

FARR Is there anybody else that wanted to testify? If not, the formal hearing for today will end. Tomorrow we are going to the Anaheim School District and I, for one, would like very much the example, Mr. Mace, of your program up here.